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**ABSTRACT**

This competency-based program guide provides course content information and procedures for secondary schools, postsecondary vocational schools, and community colleges in Florida that conduct programs in basic automotive body repair and refinishing and automotive body repair and refinishing. The first section is on legal authority, which applies to all vocational education programs in Florida. The second section describes the content of the automotive body repair and refinishing program, including occupational descriptions, program standards description, competencies, curriculum frameworks and student performance standards for each occupation, instructional approach, course outline and sample lesson plan, and information on student organizations. In the third section, student admission requirements and teacher certification and qualifications are spelled out, while the fourth section provides information on facilities and supplies for the automotive body repair and refinishing curriculum. The final section lists instructor resources (both printed and audiovisual materials), and professional organizations and support services. Appendixes to the guide contain a diagram of facilities needed for the program and an organization chart for the student organization, Vocational Industrial Clubs of America. (KC)

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PROGRAM GUIDE  
FOR

BASIC AUTOMOTIVE BODY REPAIR AND REFINISHING  
8709000 (IN47.062300)

AND

AUTOMOTIVE BODY REPAIR AND REFINISHING  
AR0900 (IN47.060300)

Prepared by

Department of Adult & Vocational Education  
College of Education  
University of South Florida  
Tampa, Florida 33620

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## INDUSTRY REPRESENTATIVES

Jerry Boyce, Boyce Paint & Body Shop

Scotty Cleland, Roger Whitley Chevrolet

Chuck Colteryahn, Precision Toyota

Tim Craig, Kenworth Trucks

Victor Drew, Drew Bros. Paint and Body

Andy DuBay, Chaires Fellows Datsun

Mike Eufemia, Lindell Volkswagon

Jerry Harding, Superior Pontiac

George Lord, Koons Ford

Bob McGuire, Fact-O-Bake Auto Painting & Auto Body Repair

Jeff Oswald, Ferman Oldsmobile

George Ruse, Ernie Haire Ford, Inc.

Joel Sanchez, Bill Currie Ford

Leon Seese, John Naughton Ford

Dave Short, Ferman Chevrolet

Curtis Smith, Roger Whitley Chevrolet

Ralph Vann, Vann's Paint & Body Shop

Frank Woxman, Kansas Jacks

#### TEACHERS

Elmer Ames, Atlantic Vocational Technical Institute

Dave Barnes, Pinellas Vocational Technical Institute

Keith Draper, Daytona Beach Community College

Arthur Hyland, Daytona Beach Community College

Brian Siemion, Marchman Vocational Center

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## INTRODUCTION

This Program Guide has been developed to provide information that will be useful to local school district and community college administrators, instructors, program advisory committee members, regional coordinating councils, and others charged with the responsibility of offering vocational education programs. The final planning and evaluation of any educational program, however, must be done within the context of local conditions. This publication will serve to identify the major concerns that should be considered in the organization, operation, and evaluation of a vocational education program.

The Legal Authority sections of the Guide relate to vocational education programs in general. The remaining sections relate specifically to the vocational education program course for which the Guide is designed.

Vocational education has evolved to meet the needs of students desiring to pursue a selected vocation. In general, vocational education is designed to provide programs, services, and activities that are realistic in light of present and future employment opportunities. In recent years, applications of science and technology have expanded rapidly, increasing the education and training required of workers. The new technologies require many additional technical supportive staff to carry out both standardized and specialized procedures.

Today, vocational education is an increasingly viable option for students. The Florida Department of Education shares with business and industry the determination to provide opportunities for upward mobility to as many Floridians as possible. In order to do this, it is necessary both to create exemplary vocational programs and to make those programs consistent throughout the state.

State Board of Education Administrative Rule 6A-10.24: Articulation between universities, community colleges, and school districts outlines steps and guidelines that will bring about a systematic interrelationship between Florida institutions offering similar or related courses and programs. The rule states, in part, that:

When a student transfers among postsecondary vocational-technical centers, community colleges, and universities, the receiving institution shall award credit for courses satisfactorily completed at the previous institutions when the courses are judged ... to be equivalent to courses offered at the receiving institution.

This Program Guide helps ensure that equivalency. Throughout Florida, vocational programs, if implemented according to the criteria described in this document, will help many citizens fill an important place in our state and national work force.

# LEGAL AUTHORITY

## Program Standards

Vocational education programs are established pursuant to Florida Statutes (hereafter F.S.) and enabling Administrative Rules adopted by the Florida State Board of Education (hereafter S.B.E.).

Section 233.0682 F.S.: State Board regulations states:

The State Board of Education shall adopt regulations setting forth minimum requirements for a comprehensive vocational education program, and shall adopt procedures for determining the extent to which such minimum requirements are being met. Such requirements shall include examination of the employment performance of program participants as well as standards of educational output, with particular emphasis on job placement and satisfactory performance in employment.

This statute is administered by S.B.E. Administrative Rule 6A-6.21: Comprehensive Vocational Education Program; definition, which states, in part, that:

the term comprehensive vocational education shall include occupational education programs not leading to a bachelor's degree. A comprehensive vocational education program is one which provides vocational programs, services and activities of high quality, realistic in light of actual or anticipated opportunities for gainful employment and suited to the needs, interests, and abilities of the persons to be served.

For the purpose of defining the vocational education programs administered by community colleges within the state, the Division of Community Colleges has adopted S.B.E. 6A-14.34 to implement 240.355 F.S.: State Board of Education Rules, which authorizes "each community college district board of trustees to initiate and provide comprehensive vocational education programs." (NOTE: S.B.E. Rule 6A-14.34 is identical to S.B.E. Rule

6A-6.621 [see above], except that all S.B.E. Chapter 6A-14 rules refer to Division of Community College-sponsored programs, while S.B.E. Chapter 6A-6 rules refer to programs sponsored by the Division of Vocational, Adult, and Community Education.)

S.B.E. Rule 6A-6.571: Criteria for qualification of special vocational-technical education program courses provides for the annual publication of Vocational Education Program Courses Standards. These course standards for each vocational education program are approved by the Florida State Board of Education and published by the Division of Vocational, Adult, and Community Education.

The Program Course Standards provide program descriptions and statements of program objectives that must be adhered to by the school districts in offering vocational programs. The extent to which these Standards are adhered to forms the basis for program review and evaluation.

Special funding provisions for vocational programs are determined in relation to all other education programs under Section 236.081 F.S.: Funds for the operation of schools.

#### Program Planning

The Vocational Education Planning Process, published in 1980 by the Division of Vocational Education, outlines the procedures local education agencies should follow in developing and submitting their five-year and annual plans for the operation of vocational education programs.

The legal basis for program planning is found in Section 229.55 F.S.: Educational Accountability Act of 1976, and 299.555 F.S.: Educational planning and information systems. These statutes address various aspects of the process of planning effective instructional programs at each level—



from the local school district to the state level. These Florida Statutes are implemented by S.B.E. 6A-6.67: Coordinating Council for vocational education, adult general education, and community instructional services, S.B.E 6A-6.70: Direct job-related vocational offerings required for each school district, and S.B.E. 6A-6.71: Student services.

School districts are encouraged to utilize the resources and support of business, industry, and the community in planning vocational programs. A portion of S.B.E. Rule 6A-6.67, which has particular implications for planning for specific vocational programs in specific schools, follows:

The responsibilities of the [coordinating] council shall be to review the total vocational education, adult general education, and community instructional services program being offered in the district, to make such recommendations as are necessary, to encourage the development of needed offerings or changes in existing offerings and to avoid unwarranted duplications.

(S.B.E. Rule 6A-14.37 addresses this topic in identical language for community college programs.)

### Program Structure

The legal basis for Florida's comprehensive vocational education structure may be found in S.B.E. Rules 6A-6.621 and 6A-14.34: Comprehensive vocational education, definition; 6A-6.63 and 6A-14.343: Scope of vocational education; 6A-6.64 and 6A-14.344: Types of vocational education courses and activities; and 6A-6.65 and 6A-14.345: Instructional components of vocational education.

Perhaps the legal basis for Florida's comprehensive vocational program is stated best in S.B.E. Rules 6A-6.65 and 6A-14.345. These rules define the components of vocational education instruction, beginning with introduction to the world of work in grades 1-6; exploratory experiences in grades 7-9; job-related experiences and prevocational training instruction

in grades 10-12; and adult-level training and retraining programs. Special needs of disadvantaged and handicapped individuals at all levels—grade 1 through adults—are considered and provided for. Based upon these rules, Florida has developed a statewide comprehensive vocational program that is recognized as one of the best in the nation.

#### Program Development

Vocational program development is geared to meet the needs of Florida's employers and students. The vocational planning process incorporates information from business and industry, including data on employers' needs and on emerging trends and changes in technological processes. Legal basis is provided by S.B.E. Rules 6A-6.64 and 6A-14.344, both entitled Types of vocational education courses and activities, for the development of the many vocational courses and programs that must be offered to meet the needs of employers and students. These rules will be amended in the future to bring them more into conformity with 1983 legislation.

Section 228.041 F.S. defines vocational education as follows:

- (22) "Vocational education" is defined as meaning that instruction not leading to a baccalaureate degree, either graded or ungraded, listed below:
  - (a) Job-preparatory instruction in the minimum competencies necessary for effective entry into an occupation, including diversified cooperative education, work experience, and job entry programs which coordinate directed study and on-the-job training;
  - (b) Exploratory courses designed to give students initial exposure to the skills and aptitudes associated with a broad range of occupations in order to assist them in making informed decisions regarding their future academic and occupational goals;

- (c) Supplemental programs designed to enable persons who are or have been employed in a specific occupation to upgrade their competencies in order to re-enter or maintain stability or advance within their occupation; or
- (d) Practical arts courses designed to teach students practical generic skills which, though applicable to some occupations, are not designed to prepare students for entry into specific occupations. Such courses may include, but may not be limited to, typing, industrial arts, and home economics.

Program development is based largely on identifying and meeting the requirements of employers and credentialing agencies. Significant input is sought from advisory groups, ad hoc committees, and task forces made up of representatives from business and industry and instructional, supervisory, and administrative personnel. The Division of Vocational, Adult, and Community Education, the school districts, and community colleges work together to develop programs with objectives that are consistent with employers' requirements.

Educational standards are established for program development. Using these standards as guides and guidelines, effective programs are developed that meet the goals of vocational education, particularly the major goal of preparing students for entry-level employment. These standards are grouped into three categories: input, process, and product. First, standards of input govern requirements for teachers, facilities, and materials. Second, standards of process help determine requirements for instruction, curriculum selection, placement, and evaluation. And third, standards of product are determined by the number and degree of competencies students achieve and by the placement of trained students in jobs.

### Program Review and Evaluation

The primary purpose of program review is program improvement. To accomplish this purpose, a review of each vocational program is necessary to determine those areas in which program improvement can be implemented most effectively.

The legal basis for program review is found in Chapter 229.565 F.S. Educational evaluation procedures. Section (3)(e) of that statute requires the Commissioner of Education to periodically examine and evaluate "the standards by which the school district evaluates basic and special programs for quality, efficiency, and effectiveness."

The term "special programs," as used here, includes vocational programs. In turn, under S.B.E. Rule 6A-1.453: Educational program audits, the Commissioner directs the Division to examine and evaluate vocational programs.

S.B.E. Rule 6A-1.453 provides for periodic audits of both the accounts and programs of each school district. It states in part that the Division shall be responsible for examination of vocational education programs to:

- a. Determine compliance with law and criteria established by rules of the State Board;
- b. Ensure that individual courses use instructional objectives which are consistent with the criteria for qualification of individual courses as outlined in the publications titled, "Vocational Education Program Courses Standards," Rule 6A-6.571, FAC; and
- c. Determine that the capability exists in the instructional setting to accomplish the course objectives.

Under this same rule, the Division also is responsible for:  
 "Examination of adult and community education programs to determine compliance with law and criteria established by rules of the State Board" and "determination of the existence and comprehensiveness of the criteria

based on district goals, by which the school district evaluates vocational education and adult general education programs."

The Vocational Education Program Courses Standards (and the new Curriculum Frameworks) provide program descriptions and objectives that may be used as criteria against which the program may be reviewed and evaluated. Basically, program review consists of a self-study by the staff of the program to be reviewed, a visitation and review by a Division staff member, a final report outlining areas of strengths and weaknesses, and a plan for strengthening weaknesses and/or improving the program. The data from the program review instruments are treated statistically and incorporated into the evaluation system.

#### Program Advisory Committees

Program advisory committees are mandated by federal (Public Law 90-576) as well as state regulations. A single State Advisory Council is provided for in S.B.E. Rule 6A-6.75: Advisory Council for Vocational Education. Committees for individual programs are covered under S.B.E. Rule 6A-6.74: Duties and responsibilities, which states that the director of the Division of Vocational, Adult, and Community Education shall "direct the work of the Division to insure the greatest possible coordination, efficiency and effectiveness in vocational and technical education in the state." The Division encourages program advisory committees as a means of fulfilling this mandate.

The Division utilizes a number of advisory committees in addition to those required by law. Each program area—Agribusiness and Natural Resources, Business, Diversified Occupations, Health Occupations, Home Economics, Industrial, Marketing and Distributive, and Public Service



Education—has a corresponding state advisory committee. Also, many general advisory committees have been formed to deal with special programs and problems.

Several advisory committees assist school districts and community colleges with vocational program planning and operation. The legal basis for such use of advisory committees may be found in S.B.E. Rules 6A-6.68 and 6A-14.38, both entitled Business and industrial community support. These rules state that school boards and boards of trustees at all levels should take positive steps (which are enumerated) to establish two-way communications and mutual responsiveness between their institution's vocational education program system and the surrounding business and industrial community.

These rules are responsive to the fact that in program development, implementation, and evaluation it is especially important that advisory committees be effectively utilized at the state and local levels. Community resources are an important part of vocational program development.



# DESCRIPTION OF THE OCCUPATION

This Competency Based Program Guide provides course content information and procedures for secondary, postsecondary vocational schools, and community colleges, conducting programs in the occupational area of Basic Automotive Body Repair and Refinishing and Automotive Body Repair and Refinishing.

The Federal Dictionary of Occupational (D.O.T.) Job Titles identifies this occupational area as follows:

| <u>D.O.T. JOB TITLE</u>         | <u>D.O.T. CODE</u> |
|---------------------------------|--------------------|
| Automobile Body Repairer        | (807.381-010)      |
| Automobile Body Repairer Helper | (807.687-010)      |
| Automotive Painter              | (741.684-026)      |
| Automotive Painter Helper       | (845.684-014)      |

The definition (description) for each of these job titles is abstracted from the D.O.T. for easy reference.

## Automobile Body Repairer (807.381-010)

Repairs damaged bodies and body parts of automotive vehicles, such as automobiles, buses, and light trucks according to repair manuals, using handtools and power tools: Examines damaged vehicles and estimates cost of repairs. Removes upholstery, accessories, electrical and hydraulic window-and-seat-operating equipment, and trim to gain access to vehicle body and fenders. Positions dolly block against surface of dented area and beats

opposite surface to remove dents, using hammer. Fills depressions with solder or other plastic material. Removes damaged fenders, panels, and grills, using wrenches and cutting torch, and bolts or welds replacement parts in position, using wrenches and cutting torch, or welding equipment. Straightens bent frames, using hydraulic jack and pulling device. Files, grinds, and sands repaired surfaces, using power tools and handtools. Refinishes repaired surface, using paint spray gun and sander. Aims headlights, aligns wheels, and bleeds hydraulic brake system. May paint surfaces after performing body repairs.

**Automobile Body Repairer Helper (807.687-010)**

A worker who assists the Automobile Body Repairer by performing a variety of duties, such as furnishing another worker with materials, tools, and supplies; cleaning work area, machines, and equipment; feeding or offbearing machines; holding materials or tools; and performing other routine duties. A Helper may learn a trade but does so without an agreement with employer that such is the purpose of their relationship.

**Automotive Painter (741.684-026)**

Sprays surfaces of machines, manufactured products, or working area with protective or decorative material, such as paint, enamel, glaze, gelcoat, or lacquer, using spray gun: Cleans grease and dirt from product, using materials, such as lacquer thinner, turpentine, soap, and water. Applies masking tape over parts and areas that are not to be coated. Fills cavities and dents with putty to attain smooth surface. Selects and mixes coating liquid to produce desired color, according to specifications, using paddle or mechanical mixer. Pours coating liquid into spray container and connects

gun to airhose, using wrenches. Turns sprayer valves and nozzle to regulate width and pressure of spray, according to knowledge of painting technique. Pulls trigger and directs spray onto work surface to apply prime or finish coat. Coats area inaccessible to hand sprayer, using brush. cleans spraying equipment and brushes with solvent. May heat and spray wax onto products after they are tested. May use acid, wire brush, or steel wool to remove rust from metal. May paint designs on rug surfaces for decorative purposes or for use as guidelines in carving rugs, using spray gun and stencil.

**Automotive Painter Helper (845.684-014)**

Assists Painter by preparing surfaces of automotive vehicles, such as automobiles, buses, and trucks, for repainting and polishes repainted vehicles: Sands rough spots on automotive vehicle. Sprays scratched areas with filler solution, using spray gun. Applies paper and masking tape to protect unpainted surfaces, such as bumpers, windows, and chrome trim. Removes gloss from intermediate coats of paint, using wet sandpaper, to insure adherence of next coat. Polishes final coat of paint, using polishing compound and cloth. Paints surfaces not readily accessible, such as wheels and underside of fenders, using brush and spray gun. May remove and replace chrome moldings and trim. May brush or spray undercoating material on replaced parts.

## PROGRAM STANDARDS DESCRIPTION

### INTRODUCTION

The Division of Vocational, Adult, and Community Education, Florida State Board of Education, is required by S.B.E. Rule 6A-6.571, to publish VOCATIONAL EDUCATION PROGRAM COURSE STANDARDS annually. The first such standards were published in 1985 and consisted of brief 1-2 page documents called CURRICULUM FRAMEWORKS. These Frameworks contained very brief statements of program objectives and course standards.

Curriculum Frameworks are included in this section of the Program Guide, and contain revised information based on the industry validated competency list. Along with the Curriculum Frameworks are detailed lists of performance objectives called STUDENT PERFORMANCE STANDARDS. The Student Performance Standards are basically performance objective statements for each item on the competency list.

### —CAREER MAP COMPETENCY LIST

The Career MAP Competency List was developed by an Industry Advisory Committee and serves as the basis for the Career MAP. This Competency List has been validated by the Industry Representatives and reviewed by Educational Representatives noted in the acknowledgements section of this guide. The list reflects the entire range of job tasks performed by employees in industry related jobs. It may include more tasks than is normally taught in a vocational program at any one particular school level and will require that instructors and administrators determine which

specialty areas and tasks are appropriate for their program.

#### ~~—CURRICULUM FRAMEWORKS~~

The Curriculum Framework specifies the course title and course number, applicable level, major course concepts, and intended outcomes. The intended outcomes section has been correlated with the competency list to include only those performance areas applicable to the course level and purpose.

#### ~~—STUDENT PERFORMANCE STANDARDS~~

The Student Performance Standards are abstracted from the Career MAP Competency List, and corresponds to the Curriculum Framework. Student Performance Standards list the detailed performance objectives that support the intended outcomes identified in the Curriculum Frameworks.

#### ~~—PROGRAM ARTICULATION~~

Vocational programs that teach the same subject at high schools, vocational technical schools, and community colleges should be structured to eliminate unnecessary retraining of students who have mastered competencies at a lower school level. This coordination of programs at different school levels is referred to as ARTICULATION. Specifically ~~-ARTICULATION-~~ is an arrangement between secondary and vocational-technical centers, and community colleges, which would allow a student who completed a secondary vocational program to enter an area vocational-technical center or community college and receive credit for the secondary vocational program and be placed in the higher level program at an advanced level. It would also allow a student who completed a vocational program in an area vocational-technical center to



enter a community college program and receive credit for the area vocational-technical center program and be placed in the higher level program at an advanced level.

ARTICULATION in this manner will require vocational teachers to interview each student entering a postsecondary level program and determine what competencies have been previously mastered. The teacher may have to utilize the Career MAP, if available, or some type of pre-test or performance evaluation to verify that the student is in fact still competent in the appropriate tasks. Teachers of postsecondary programs will often have two or more course tracks operating simultaneously, one for those students with no prior experience, and one or more individualized or small group tracks for students with various levels of prior experience.

#### —CAREER MAP UTILIZATION

##### I. Career MAP Definition:

A Career Merit Achievement Plan (Career MAP) is a matrix of vocational competencies that is designed for individual students to record the skills they have mastered in school or industry. The MAPs primarily list performance competencies, although some cognitive competencies are included. Career MAPs contain blocks in which each individual task is listed and includes a line for the instructor to sign, indicating that the student has become competent in the performance of the task. Career Maps are published and distributed separately from the Program Guide.



## II. Purpose of Career MAPs:

Career MAPs are being developed for each Industrial Education program in the State of Florida as a means to document student activity and performance and to communicate that activity to employers. The MAPs, showing what a student has already mastered, could also be used by the student when transferring to another school system or a higher level program, to integrate the student into those training programs at the student's level of competence. This is particularly important when entering competency based programs using "open entry-open exit" methodology, or when entering an on-the-job industrial training course. Many companies require employees to periodically attend skill upgrade and crosstraining courses and attend short courses for new equipment and process familiarization. The Career MAP can also be used by employees to record their achievement in industry sponsored training activity, so the MAP becomes an individuals lifetime record of technical competency.

## III. Recommended Utilization of Career MAPs:

- A. Teachers in Florida Industrial Education and other Vocational related programs should provide every student they teach, a Career MAP to record the student's mastery of each competency completed in the course. Teachers should ensure that the use of Career MAPs are explained to students and should ensure that the students take their Career MAPs with them when they leave the course.
- B. Students should use Career MAPs as a record of their technical competence as they progress from high school courses and/or

through vocational technical schools, or through community colleges and on into industrial training programs provided by employers. Students pursuing vocational technical careers should use the Career MAP as an overall record of their entire career achievement, maintaining other individual certificates of course completion as supporting documents for Career MAPs.

#### IV. Career Map Development:

Draft lists of competencies were developed by Industrial Advisory committees under a project administered by the University of South Florida and funded by the Vocational Division of the State Department of Education. These lists were then reviewed, revised, and validated by craft advisory committees throughout Florida. Committees of teachers as well as industry experts then reviewed the lists. Finally, after Competency Lists were approved by both industry and educational advisors the lists were typeset in a matrix format and printed by the Department of Education. The developers of the MAPs had access to any V-TECS catalogs or Student Performance Standards that were applicable. If objectives were judged relevant they were included but sometimes in different wording. Some competencies listed on the MAP may actually encompass several objectives from other sources or might even be considered as subskills to V-TECS. Career MAPs list competencies that could be learned either in school or after a person has been on the job. Career MAPs, as the words suggest, map the competencies achieved by a person through school training and job experiences.

V. Career MAP's use with Program Guides and Standards:

Course/Program Standards have traditionally been used in the Program Review process and will continue to be used. The Career MAPs do not replace Course/Program Standards. MAPs usually contain competencies beyond those required at the job-entry level. Future editing of Course/Program Standards will more than likely reflect the wording of many of the competencies in the Career MAPs.

Program Guides will be developed for all vocational programs having validated MAPs. The Guide brings together into one document the critical components necessary to initiate or update an existing program. Included in the Program Guide are the MAP competencies, the Program Standards, and guidelines for curriculum development, use of local craft advisory committees, facilities planning, etc.

Career MAPs are intended to facilitate articulation and communication regarding specific vocational programs. The Career MAP is a baseline document for planning and can be used for a variety of purposes: student counseling; curriculum planning; teacher recruitment, and selection; teacher and program updating; facility layout and design; equipment requirement planning; student evaluation; program improvement; and for discussions with craft advisory committees.

Career MAPs can be used to profile the competencies to be mastered for one or more Dictionary of Occupational Titles (DOT) occupations within the major occupational area. Career MAPs reflect state-of-the-art technology for the occupational area and accommodate

competency mastery in an industrial setting through cooperative or internship arrangements. Some advanced competencies included on the MAPs are desirable but not necessary for initial employment and may be learned later as supplemental training. Teachers can acquire class sets of the MAPs and use them daily with students from the first day of instruction, or, after keeping separate records of students' mastery of competencies, teachers can transfer these to the MAP just before students exit from the program. Students can request future employers to authenticate additional competencies as they master them on the job.

VI. Obtaining Additional MAPs:

Contact the Industrial Education Regional Consultant or the DVE Regional Office to order MAPs. Entire class sets are available for teacher use. Teachers or users outside the targeted population may purchase sets for a nominal cost-recovery fee. For additional information or training in the use of the Career MAPs contact the Regional Consultant or:

Dissemination and Diffusion Section  
 Division of Vocational Adult  
 & Community Education  
 Department of Education  
 Knott Building  
 Tallahassee, FL 32301  
 (904) 488-0405 or Suncom 278-0405

VALIDATED LIST OF COMPETENCIES  
BASIC AUTOMOTIVE BODY REPAIR AND REFINISHING  
and  
AUTOMOTIVE BODY REPAIR AND REFINISHING  
November 25, 1985

Listed below are competencies that each Automotive Body Repair and Refinishing Technician should possess to be a productive beginning worker in this occupation. The numbers to the right of each competency represent the specialization areas indicated below. If a number appears to the right of a competency, that competency is considered essential to the specialization area.

| <u>Number</u> | <u>Specialization</u>                         |
|---------------|-----------------------------------------------|
| 1             | Automobile Body Repairer (807.381-010)        |
| 2             | Automobile Body Repairer Helper (807.687-010) |
| 3             | Automotive Painter (845.381-014)              |
| 4             | Automotive Painter Helper (845.684-014)       |



01.0 SHOP & OCCUPATIONAL SAFETY SKILLS

|     |                                                                                                                                                                                 |   |   |   |   |
|-----|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|---|---|---|
| 001 | Comply with safety rules regarding chemicals (P)                                                                                                                                | 1 | 2 | 3 | 4 |
| 002 | Comply with safety rules regarding personal clothing & devices (P)                                                                                                              | 1 | 2 | 3 | 4 |
| 003 | Comply with safety rules regarding hand tools & power equipment (P)                                                                                                             | 1 | 2 | 3 | 4 |
| 004 | Comply with shop safety rules & regulations (P)                                                                                                                                 | 1 | 2 | 3 | 4 |
| 005 | Identify sources of airborne contamination & other hazards; take necessary steps to protect the health of the painter & other personnel (P)                                     | 1 | 2 | 3 | 4 |
| 006 | Inspect air makeup & exhaust systems (including intake filters, exhaust filters, fans & other mechanical components of the system) to insure proper filtering & ventilation (P) | 1 | 2 | 3 | 4 |
| 007 | Identify career opportunities in auto body repair (C)                                                                                                                           | 1 | 2 | 3 | 4 |
| 008 | Explain requirements for continuing education in auto body repair (C)                                                                                                           | 1 | 2 | 3 | 4 |

02.0 LEGAL LIABILITY & INSURANCE IMPLICATIONS

|       |                                                                     |   |   |   |   |
|-------|---------------------------------------------------------------------|---|---|---|---|
| * 001 | Identify legal & liability implications (C)                         | 1 |   | 3 |   |
| * 002 | Identify conditions which represent fraud (C)                       | 1 |   | 3 |   |
| 003   | Report deviations from work-order instructions & shop practices (P) | 1 | 2 | 3 | 4 |

- \* 004 Compare & match adjustor's estimate to work order to recognize deviations (C) 1 2 3 4

03.0 PREPARATION FOR REPAIR & REFINISHING

- \* 001 Diagnose & analyze damage to determine appropriate methods for over-all repair (P) 1 3
- 002 Remove damaged outside trim & moldings (P) 1 3
- 003 Remove damaged or necessary inside trim & moldings (P) 1 2 3 4
- 004 Remove damaged, nonstructural body panels & components that may interfere with, or be damaged during, repair (P) 1 2
- \* 005 Remove all vehicle mechanical components that may interfere with, or be damaged during, repair; replace after repair (P) 1 2
- 006 Protect panels & parts adjacent to repair area to prevent damage (P) 1 2 3 4
- 007 Remove dirt, corrosion, undercoatings, sealers, &/or other protective coatings necessary to perform repairs to structural areas (P) 1 2 3 4
- 008 Remove repairable plastics & other parts that are recommended for off-car repair (P) 1 2 3 4

04.0 OUTER BODY PANEL REPAIRS, REPLACEMENTS, & ADJUSTMENTS

|       |                                                                                                                                                                                                |   |   |
|-------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|---|
| 001   | Remove & replace a bolted panel or panel assembly (P)                                                                                                                                          | 1 | 2 |
| * 002 | Remove & replace a welded sheet-metal panel or panel assembly (P)                                                                                                                              | 1 | 2 |
| * 003 | Remove & replace a welded aluminum panel or panel assembly (P)                                                                                                                                 | 1 | 2 |
| 004   | Remove & replace hood, hood hinges, & hood latch (P)                                                                                                                                           | 1 | 2 |
| 005   | Remove & replace deck lid, lid hinges, & lid latch (P)                                                                                                                                         | 1 | 2 |
| 006   | Remove & replace doors, tailgates, hatches, liftgates, & hinges (P)                                                                                                                            | 1 | 2 |
| 007   | Remove & replace bumpers, reinforcements, guards, isolators, & mounting hardware (release pressure from gas- & oil-filled energy-absorbing-type bumper isolators that are being discarded) (P) | 1 | 2 |
| 008   | Check & adjust hood clearances to adjoining panels (P)                                                                                                                                         | 1 | 2 |
| 009   | Check & adjust deck lid, liftgate, & hatch clearances to adjoining panels (P)                                                                                                                  | 1 | 2 |
| 010   | Check door-hinge condition; check door frames for square; check & adjust door clearances (where adjustable) along quarter panel, door, rocker panel, fender, & top (P)                         | 1 | 2 |
| 011   | Check & adjust latch assemblies on all hinged components (P)                                                                                                                                   | 1 | 2 |
| 012   | Check & adjust bumper clearances to adjacent body & filler panels (P)                                                                                                                          | 1 | 2 |

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|-------|-----------------------------------------------------------------------------------------------------------------|---|---|
| 013   | Straighten roughed-out contours of damaged panel to a surface condition for body filling or metal finishing (P) | 1 | 2 |
| 014   | Weld cracked or torn steel body-panels; reweld broken welds (P)                                                 | 1 | 2 |
| * 015 | Heat-shrink stretched panel-areas back to contour (P)                                                           | 1 | 2 |
| 016   | Cold-shrink stretched panel-areas back to contour (P)                                                           | 1 | 2 |
| 017   | Restore protective coatings & sealants (P)                                                                      | 1 | 2 |
| * 018 | Braze body-panels only in locations recommended by vehicle manufacturers (P)                                    | 1 | 2 |
| * 019 | Repair or replace door skins & intrusion beams (P)                                                              | 1 | 2 |

#### 05.0 METAL FINISHING PREPARATION

- |     |                                                                                      |   |   |
|-----|--------------------------------------------------------------------------------------|---|---|
| 001 | Identify specification(s) of metals used in automobiles (C)                          | 1 | 2 |
| 002 | Identify heat effect on metals (C)                                                   | 1 | 2 |
| 003 | Identify importance of maintaining structural integrity of auto body (C)             | 1 | 2 |
| 004 | Grind the paint from the damaged area of a body panel (P)                            | 1 | 2 |
| 005 | Pick & file the damaged area of a body panel to eliminate surface irregularities (P) | 1 | 2 |
| 006 | Disc-sand the repaired body-panel to produce final smoothness (P)                    | 1 | 2 |

06.0 PREPARATION & APPLICATION OF BODY-FILLERS

- |       |                                                                                  |   |   |
|-------|----------------------------------------------------------------------------------|---|---|
| 001   | Mix plastic filler (P)                                                           | 1 | 2 |
| 002   | Apply plastic body-filler & cheese-grate during curing (P)                       | 1 | 2 |
| 003   | Rough-sand cured plastic body-filler to contour, & then finish-sand (P)          | 1 | 2 |
| * 004 | Tin surface to be leaded with acid, ruby fluid, etc. (OPTIONAL) (P)              | 1 | 2 |
| * 005 | Clean surface of body panel to avoid trapping acid under the lead (OPTIONAL) (P) | 1 | 2 |
| * 006 | Neutralize the tinning-agent acid (OPTIONAL) (P)                                 | 1 | 2 |
| * 007 | Clean & file surface of body panel for solder filling (OPTIONAL) (P)             | 1 | 2 |
| * 008 | Apply & paddle body-solder (OPTIONAL) (P)                                        | 1 | 2 |
| * 009 | Grind & file body-solder to contour, then finish-sand (OPTIONAL) (P)             | 1 | 2 |

07.0 FIBER GLASS & PLASTIC COMPONENTS REPAIR

- |       |                                                                       |   |   |
|-------|-----------------------------------------------------------------------|---|---|
| * 001 | Repair deep gouges & cracks in fiber glass panels (P)                 | 1 | 2 |
| * 002 | Repair holes in fiber glass panels (P)                                | 1 | 2 |
| * 003 | Replace fiber glass body-panels & straighten/align panel supports (P) | 1 | 2 |

- \* 004 Remove damaged areas from fiber glass panels; repair with partial-panel installation (P) 1 2
- \* 005 Identify the type of plastic to be repaired & the appropriate repair procedure (including hot-air welding, chemical bonding, & the use of structural adhesives) (C) 1 2
- \* 006 Prepare surfaces of thermoplastic parts & repair damage (P) 1 2
- \* 007 Prepare the surface of thermosetting-plastic parts & repair damage (P) 1 2

#### 08.0 WELDING OPERATIONS

- 001 Set up, operate, & maintain MIG, spot, oxyacetylene, & other welding equipment (P) 1 2
- \* 002 Apply basic metal applications (P) 1 2
- \* 003 Comply with manufacturers' specifications for joining metal (P) 1 2

#### 09.0 DIAGNOSTIC EQUIPMENT OPERATIONS

- \* 001 Recognize types of diagnostic equipment (C) 1
- \* 002 Diagnose & measure frame damage using self-centering gauges (P) 1
- \* 003 Diagnose & measure frame damage using a tram gauge (P) 1



- \* 004 Diagnose & measure frame damage using datum-line gauges (P) 1

10.0 UNIBODY VEHICLE INSPECTION, MEASUREMENT, & REPAIR

- \* 001 Recognize that measuring, dimensioning, & tolerance limits in unibody vehicles are critical to repair of these vehicles, & that suspension mount-points & engine power-train attaching-points are critical to vehicle 4-wheel alignment (potential vibration & steering problems can result if these are improperly positioned); adjust in accordance with vehicle manufacturers' recommendations (P) 1 2
- \* 002 Recognize that bent or damaged steering, suspension, & power-train components can cause vibration, steering, & 4-wheel alignment problems; replace in accordance with vehicle manufacturers' recommendations (P) 1 2
- \* 003 Diagnose & measure unibody damage using self-centering gauges (P) 1
- \* 004 Diagnose & measure unibody damage using a tram gauge (P) 1
- \* 005 Diagnose & measure unibody damage using datum-line gauges (P) 1
- \* 006 Determine the location of all suspension, steering, & power-train components attaching-points to the body (P) 1 2

- |       |                                                                                                                                                                                                                        |     |
|-------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|
| * 007 | Diagnose & measure unibody damage using a dedicated (fixture) measuring system (P)                                                                                                                                     | 1   |
| * 008 | Diagnose & measure unibody damage using a universal measuring system or a laser (P)                                                                                                                                    | 1   |
| * 009 | Determine the extent of the direct & indirect damage & the direction of impact, & plan the method & order of repair (P)                                                                                                | 1   |
| * 010 | Attach proper body-anchoring devices (P)                                                                                                                                                                               | 1 2 |
| * 011 | Straighten & align cowl assembly (P)                                                                                                                                                                                   | 1 2 |
| * 012 | Straighten & align roof pillars & roof panels (P)                                                                                                                                                                      | 1 2 |
| * 013 | Straighten & align door posts (P)                                                                                                                                                                                      | 1 2 |
| * 014 | Straighten & align door sills, floor pan, & rocker panels (P)                                                                                                                                                          | 1 2 |
| * 015 | Straighten & align quarter panels, wheel-house assemblies, & rear body-sections (including rails, suspension, & power-train mounting-points) (P)                                                                       | 1 2 |
| * 016 | Straighten/align front-end sections (aprons, strut towers, upper/lower rails, steering, suspension, & power-train mounting-points, etc.) (P)                                                                           | 1 2 |
| * 017 | Recognize limitations of applying heat to high-strength steel structural components; use proper heat-stress-relief methods on high-strength steel & weld in accordance with vehicle manufacturers' recommendations (P) | 1 2 |
| * 018 | Use proper cold-stress-relief methods (P)                                                                                                                                                                              | 1 2 |

- \* 019 Remove folds, curves, creases, & dents using power 1 2  
tools & hand tools to restore damaged areas to proper  
contours & dimensions (P)
- \* 020 Determine extent of damage to structural steel 1 2  
body-panels; repair, weld, or replace in accordance with  
manufacturers' specifications (P)
- \* 021 Determine extent of damage to structural aluminum 1 2  
body-panels; repair, weld, or replace in accordance  
with manufacturers' specifications (P)
- \* 022 Cut out damaged sections of structural steel body-panels 1 2  
& weld in replacements in accordance with manufacturers'  
specifications (P)
- \* 023 Cut out damaged sections of structural aluminum 1 2  
body-panels & weld in replacements in accordance with  
manufacturers' specifications (P)
- \* 024 Recheck panel contour & alignment after shaping, & 1 2  
correct or adjust as necessary (P)
- \* 025 Clean, prime, & protective-coat repaired unibody 1 2 3 4  
structural areas (P)

#### 11.0 FRAME-TYPE BODY INSPECTION & REPAIR

- 001 Determine the extent of the direct & indirect damage & 1  
the direction of impact, & plan the methods & order of  
repair (P)

|       |                                                                                                                                          |   |   |   |   |
|-------|------------------------------------------------------------------------------------------------------------------------------------------|---|---|---|---|
| * 002 | Straighten & align mash damage (P)                                                                                                       | 1 | 2 |   |   |
| * 003 | Straighten & align sag damage (P)                                                                                                        | 1 | 2 |   |   |
| * 004 | Straighten & align sidesway damage (P)                                                                                                   | 1 | 2 |   |   |
| * 005 | Straighten & align twist damage (P)                                                                                                      | 1 | 2 |   |   |
| * 006 | Straighten & align kickup damage (P)                                                                                                     | 1 | 2 |   |   |
| * 007 | Straighten & align broadside damage (P)                                                                                                  | 1 | 2 |   |   |
| * 008 | Straighten & align diamond frame damage (P)                                                                                              | 1 | 2 |   |   |
| * 009 | Remove & replace damaged frame horns, side rails,<br>cross members, front or rear frame-sections; weld<br>cracks in frame members (P)    | 1 | 2 |   |   |
| 010   | Clean, prime, & protective-coat repaired frame-areas (P)                                                                                 | 1 | 2 | 3 | 4 |
| * 011 | Repair, reinforce, or replace weakened frame-members<br>in accordance with vehicle manufacturers'<br>recommendations (P)                 | 1 | 2 |   |   |
| * 012 | Straighten & align cowl assembly (P)                                                                                                     | 1 | 2 |   |   |
| * 013 | Straighten & align roof pillars & roof panels (P)                                                                                        | 1 | 2 |   |   |
| * 014 | Straighten & align door posts (P)                                                                                                        | 1 | 2 |   |   |
| * 015 | Straighten & align door sills, floor pan, & rocker<br>panels (P)                                                                         | 1 | 2 |   |   |
| * 016 | Straighten & align quarter panels, wheel-house<br>assemblies, & rear body-sections (P)                                                   | 1 | 2 |   |   |
| * 017 | Remove folds, curves, creases, & dents using power<br>tools & hand tools to restore damaged areas to proper<br>contours & dimensions (P) | 1 | 2 |   |   |
| * 018 | Weld cracked or torn sheet-steel body-panels; reweld<br>broken welds (P)                                                                 | 1 | 2 |   |   |

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|-------|----------------------------------------------------------------------------------------|---|---|
| * 019 | Weld cracked or torn aluminum body-panels; reweld<br>broken welds (P)                  | 1 | 2 |
| * 020 | Cut out damaged sections of sheet-steel body-panels<br>& weld in replacements (P)      | 1 | 2 |
| * 021 | Cut out damaged sections of aluminum body-panels & weld<br>in replacements (P)         | 1 | 2 |
| * 022 | Heat-shrink stretched panel-areas back to contour (P)                                  | 1 | 2 |
| 023   | Cold-shrink stretched panel-areas back to contour (P)                                  | 1 | 2 |
| 024   | Recheck panel contour & alignment after shaping;<br>correct or adjust as necessary (P) | 1 | 2 |

## 12.0 PREPARATION OF SURFACES

- |     |                                                                                             |   |   |   |   |
|-----|---------------------------------------------------------------------------------------------|---|---|---|---|
| 001 | Inspect & identify type of finish & surface conditon;<br>develop a plan for refinishing (P) | 1 | 2 | 3 | 4 |
| 002 | Remove & store trim & molding (P)                                                           | 1 | 2 | 3 | 4 |
| 003 | Remove dirt, wax, & road grime from area to be<br>refinished & adjacent surfaces (P)        | 1 | 2 | 3 | 4 |
| 004 | Mask trim & other areas that will not be refinished (P)                                     |   |   | 3 | 4 |
| 005 | Remove paint finish (chemically or mechanically) (P)                                        | 1 | 2 | 3 | 4 |
| 006 | Dry- or wet-sand areas to be refinished (P)                                                 | 1 | 2 | 3 | 4 |
| 007 | Feather-edge broken areas to be refinished (P)                                              |   |   | 3 | 4 |
| 008 | Identify type of metal & apply suitable metal<br>treatments (P)                             | 1 | 2 | 3 | 4 |

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|-----|-----------------------------------------------------------------------------------------------|---|-------|
| 009 | Mix primer, primer-surfacer, or primer-sealer & spray<br>onto surface of repaired area (P)    | 3 | 4     |
| 010 | Apply glazing putty to pin-holes, scratches, & other<br>minor surface imperfections (P)       | 1 | 2 3 4 |
| 011 | Dry- or wet-sand area to which primer-surfacer & glazing<br>putty have been applied (P)       | 1 | 2 3 4 |
| 012 | Compound around the edge of the repaired area to be<br>refinished (P)                         | 3 | 4     |
| 013 | Blow dust from area to be refinished, including cracks<br>or moldings of adjacent areas (P)   | 3 | 4     |
| 014 | Clean area to be refinished with a proper solvent (P)                                         | 3 | 4     |
| 015 | Remove, with a tack rag, any dust or lint particles from<br>the area to be refinished (P)     | 3 | 4     |
| 016 | Apply suitable sealer to the area being refinished when<br>sealing is needed or desirable (P) | 3 | 4     |

### 13.0 SPRAY EQUIPMENT

- |     |                                                                                                                                           |   |   |
|-----|-------------------------------------------------------------------------------------------------------------------------------------------|---|---|
| 001 | Check & adjust air pressure at the spray gun (P)                                                                                          | 3 | 4 |
| 002 | Adjust spray-gun fluid & pattern-control valves (P)                                                                                       | 3 | 4 |
| 003 | Use appropriate spray technique (gun arc, gun angle, gun<br>distance, gun speed, & spray-pattern overlap) for finish<br>being applied (P) | 3 | 4 |



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|-----|----------------------------------------------------------------------------------------------------------------------------------------|---|---|
| 004 | Inspect, clean, & determine condition & adequacy of spray guns & related equipment (air hoses, regulator, air lines, & compressor) (P) | 3 | 4 |
|-----|----------------------------------------------------------------------------------------------------------------------------------------|---|---|

#### 14.0 PAINTING

- |       |                                                                                                                                                     |   |   |
|-------|-----------------------------------------------------------------------------------------------------------------------------------------------------|---|---|
| 001   | Select proper spray mask; inspect the spray mask to insure proper fit & operation; inspect the condition of the mask filters & other components (P) | 3 | 4 |
| 002   | Determine type & color of paint already on vehicle (P)                                                                                              | 3 | 4 |
| 003   | Shake, stir, thin or reduce, & strain paint (P)                                                                                                     | 3 | 4 |
| * 004 | Apply acrylic enamel for a spot repair (P)                                                                                                          | 3 | 4 |
| 005   | Apply acrylic enamel for a panel repair (P)                                                                                                         | 3 | 4 |
| 006   | Apply acrylic enamel for an over-all refinishing (P)                                                                                                | 3 | 4 |
| * 007 | Apply polyurethane enamel for a panel & an over-all refinishing (P)                                                                                 | 3 | 4 |
| * 008 | Apply alkyd enamel for a panel & an over-all refinishing (P)                                                                                        | 3 | 4 |
| 009   | Apply acrylic lacquer for a spot repair (P)                                                                                                         | 3 | 4 |
| 010   | Apply acrylic lacquer for a panel repair (P)                                                                                                        | 3 | 4 |
| * 011 | Apply acrylic lacquer for an over-all refinishing (P)                                                                                               | 3 | 4 |
| 012   | Check for color-matching of all applied materials (P)                                                                                               | 3 | 4 |
| * 013 | Apply acrylic-lacquer clearcoat for a spot repair (P)                                                                                               | 3 | 4 |
| * 014 | Apply acrylic-lacquer clearcoat for a panel & an over-all repair (P)                                                                                | 3 | 4 |

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|-------|----------------------------------------------------------------------------------------------------|---|---|
| * 015 | Apply enamel clearcoat for a spot repair (P)                                                       | 3 | 4 |
| * 016 | Apply enamel clearcoat for a panel & an over-all repair (P)                                        | 3 | 4 |
| 017   | Sand, buff, & polish finishes where necessary (P)                                                  | 3 | 4 |
| 018   | Identify the type of plastic parts to be finished & determine the proper refinishing procedure (C) | 3 | 4 |
| 019   | Apply finish coat to plastic parts (P)                                                             | 3 | 4 |
| 020   | Clean, condition, & refinish vinyl (e.g. upholstery, dashes, & tops) (P)                           | 3 | 4 |
| 021   | Clean & detail vehicle after complete refinishing (P)                                              | 3 | 4 |
| 022   | Apply stone-chip-resistant coating to lower body areas (P)                                         | 3 | 4 |
| 023   | Restore corrosion-resistant coatings, caulking, & seam sealers to repaired areas (P)               | 3 | 4 |
| * 024 | Apply decals, transfers, tapes, wood-grains, pinstripings (painted & taped), etc. (P)              | 3 | 4 |

#### 15.0 PAINT-APPLICATION PROBLEMS

- |     |                                                                                                          |   |   |
|-----|----------------------------------------------------------------------------------------------------------|---|---|
| 001 | Identify blistering or raising of the paint surface; determine the cause(s), & correct the condition (P) | 3 | 4 |
| 002 | Identify blushing (milky or dull mist-formation); determine the cause(s), & correct the condition (P)    | 3 | 4 |

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|-----|--------------------------------------------------------------------------------------------------------------------------------------------|---|---|
| 003 | Identify bull's-eye effect in the paint surface; determine the cause(s), & correct the condition (P)                                       | 3 | 4 |
| 004 | Identify crow's-feet or crazing appearance in the paint surface; determine the cause(s), & correct the condition (P)                       | 3 | 4 |
| 005 | Check for dirt in the painted surface; determine the source(s), & correct the condition (P)                                                | 3 | 4 |
| 006 | Identify a dry-spray pattern in the paint surface; determine the cause(s), & correct the condition (P)                                     | 3 | 4 |
| 007 | Identify the appearance of fisheyes in the finish after it has been applied; determine the cause(s), & correct the condition (P)           | 3 | 4 |
| 008 | Identify lifting (surface distortion or shriveling) while the topcoat is being applied; identify the cause(s), & correct the condition (P) | 3 | 4 |
| 009 | Identify molting (or streaking) in metallic-paint finishes; determine the cause(s), & correct the condition (P)                            | 3 | 4 |
| 010 | Identify orange-peel appearance of the refinished surface; determine the cause(s), & correct the condition (P)                             | 3 | 4 |
| 011 | Identify overspray resulting from overlap; determine the cause(s), & correct the condition (P)                                             | 3 | 4 |
| 012 | Identify pin-holing (solvent-popping) appearance in the freshly-painted surface; determine the cause(s), & correct the condition (P)       | 3 | 4 |

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|-------|----------------------------------------------------------------------------------------------------------------------------------|---|---|
| 013   | Identify sags & runs in the paint surface; determine the cause(s), & correct the condition (P)                                   | 3 | 4 |
| 014   | Identify sand-scratch swelling; determine the cause(s), & correct the condition (P)                                              | 3 | 4 |
| 015   | Identify shrinking or splitting while finish is drying around repaired area; determine the cause(s), & correct the condition (P) | 3 | 4 |
| * 016 | Identify that color-coat is off-shade or does not match; determine the cause(s), & correct the condition (P)                     | 3 | 4 |
| 017   | Identify tape-tracking; determine the cause(s), & correct the condition (P)                                                      | 3 | 4 |
| 018   | Identify bleeding; determine the cause(s), & correct the condition (P)                                                           | 3 | 4 |

#### 16.0 FINISH DEFECTS & CORRECTIVE ACTION

- |     |                                                                                                                        |   |   |
|-----|------------------------------------------------------------------------------------------------------------------------|---|---|
| 001 | Identify poor adhesion; determine the cause(s), & take action to correct the condition (P)                             | 3 | 4 |
| 002 | Identify paint-cracking (crow's-feet or line-checking, micro-checking, etc.); take action to correct the condition (P) | 3 | 4 |
| 003 | Identify orange-peel appearance of the finished surface; take action to correct the condition (P)                      | 3 | 4 |
| 004 | Check for rust spots on the surface; determine the cause(s), & take action to correct the condition (P)                | 3 | 4 |

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|-----|---------------------------------------------------------------------------------------------------------------------------------------------------------------|---|---|
| 005 | Identify pin-holing (solvent-popping) & blistering appearance in the paint surface; determine the cause(s), & take action to correct the condition (P)        | 3 | 4 |
| 006 | Identify water-spotting on paint surface; take action to correct the condition (P)                                                                            | 3 | 4 |
| 007 | Identify wrinkling of enamel; take action to correct the condition (P)                                                                                        | 3 | 4 |
| 008 | Identify buffing-wheel burns on a painted surface; determine the cause(s), & take action to correct the condition (P)                                         | 3 | 4 |
| 009 | Identify finish damage caused by bird droppings, tree sap, & other natural causes; take action to correct the condition (P)                                   | 3 | 4 |
| 010 | Identify finish damage caused by airborne overspray, acids, soot, & other industrial-related causes; take action to correct the condition (P)                 | 3 | 4 |
| 011 | Identify die-back conditions (both dulling of the paint film showing haziness, & film distortion showing shrinking); take action to correct the condition (P) | 3 | 4 |
| 012 | Identify chalking (or oxidation); take action to correct the condition (P)                                                                                    | 3 | 4 |

17.0 MISCELLANEOUS REPAIR

|       |                                                                                                                                                                               |   |   |   |   |
|-------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|---|---|---|
| 001   | Inspect, adjust, repair, or replace window regulators, run channels, glass, power mechanisms, & related controls (P)                                                          | 1 | 2 | 3 | 4 |
| * 002 | Repair/replace all power-driven accessories & related controls (including electrically-heated glass) (P)                                                                      | 1 | 2 | 3 | 4 |
| 003   | Diagnose & repair water leaks, dust leaks, & wind noises (P)                                                                                                                  | 1 | 2 | 3 | 4 |
| 004   | Inspect, repair, or replace weatherstripping (P)                                                                                                                              | 1 | 2 | 3 | 4 |
| 005   | Inspect, remove, & replace all stationary glass (including windshields, back lights, etc.) using manufacturers' recommended installation materials & procedures (P)           | 1 | 2 |   |   |
| * 006 | Inspect, repair or replace, & adjust removable manually-operated or electrically-operated roof panel, hinges, latches, guides, handles, retainer, & controls of sun roofs (P) | 1 | 2 |   |   |
| * 007 | Inspect, repair, & replace convertible top & related mechanisms (OPTIONAL) (P)                                                                                                | 1 | 2 |   |   |
| * 008 | Remove & replace vinyl tops (P)                                                                                                                                               | 1 | 2 |   |   |
| 009   | Repair damaged circuits & wires (P)                                                                                                                                           | 1 | 2 |   |   |
| * 010 | Remove & replace & cap off air-conditioner components (P)                                                                                                                     | 1 | 2 |   |   |
| * 011 | Evacuate & recharge air conditioning system (P)                                                                                                                               | 1 | 2 |   |   |



|       |                                                                                     |   |   |   |   |
|-------|-------------------------------------------------------------------------------------|---|---|---|---|
| * 012 | Identify procedures to remove & replace engine & mounts (C)                         | 1 | 2 |   |   |
| * 013 | Identify procedures to remove & replace transmission & mounts (C)                   | 1 | 2 |   |   |
| * 014 | Identify procedures to remove & replace suspension parts (C)                        | 1 | 2 |   |   |
| * 015 | Identify procedures to remove & replace brake parts (C)                             | 1 | 2 |   |   |
| * 016 | Identify procedures to bleed brakes (C)                                             | 1 | 2 |   |   |
| * 017 | Identify procedures to remove & replace fuel system components (C)                  | 1 | 2 |   |   |
| * 018 | Identify procedures to perform front-end alignment (C)                              | 1 | 2 |   |   |
| 019   | Align headlamps (P)                                                                 | 1 | 2 |   |   |
| 020   | Apply rust-repair methods including grinding, sandblasting, & metal preparation (P) | 1 | 2 | 3 | 4 |
| * 021 | Install metal inserts, epoxy, fiber glass or suitable filler, & undercoating (P)    | 1 | 2 | 3 | 4 |
| 022   | Detail & clean up car after job completion (P)                                      | 1 | 2 | 3 | 4 |

18.0 EMPLOYABILITY SKILLS

|     |                                                                                   |   |   |   |   |
|-----|-----------------------------------------------------------------------------------|---|---|---|---|
| 001 | List sources of job openings other than public or private employment agencies (P) | 1 | 2 | 3 | 4 |
| 002 | Write a letter of application for a job (P)                                       | 1 | 2 | 3 | 4 |
| 003 | Prepare a resume or personal fact sheet (P)                                       | 1 | 2 | 3 | 4 |
| 004 | List factors to consider when applying for a job (P)                              | 1 | 2 | 3 | 4 |

|       |                                                                                                      |   |   |   |   |
|-------|------------------------------------------------------------------------------------------------------|---|---|---|---|
| 005   | List ways of making contact with employers (P)                                                       | 1 | 2 | 3 | 4 |
| 006   | Identify documents which may be required when<br>applying for a job interview (C)                    | 1 | 2 | 3 | 4 |
| 007   | Complete a job application form correctly (P)                                                        | 1 | 2 | 3 | 4 |
| 008   | Identify appropriate dress & grooming for a job<br>interview (C)                                     | 1 | 2 | 3 | 4 |
| 009   | Classify behaviors considered to be appropriate or<br>inappropriate in a job interview situation (C) | 1 | 2 | 3 | 4 |
| 010   | Describe the advantages to the employer & employee<br>of being a productive worker (C)               | 1 | 2 | 3 | 4 |
| 011   | Explain the purpose of supervision, self-discipline, &<br>performance evaluation (C)                 | 1 | 2 | 3 | 4 |
| 012   | Identify appropriate response(s) to criticism from<br>employer, supervisor, or other employees (C)   | 1 | 2 | 3 | 4 |
| 013   | List consequences of frequently being absent from the<br>job (P)                                     | 1 | 2 | 3 | 4 |
| 014   | List consequences of frequently arriving late for<br>work (P)                                        | 1 | 2 | 3 | 4 |
| 015   | List factors to consider when resigning from a job (P)                                               | 1 | 2 | 3 | 4 |
| 016   | Write a letter of resignation (P)                                                                    | 1 | 2 | 3 | 4 |
| 017   | Observe the principles of honesty & integrity with<br>employers, customers, & fellow workers (P)     | 1 | 2 | 3 | 4 |
| * 018 | Qualify for certification by passing the ASE written<br>test (P)                                     | 1 | 2 | 3 | 4 |

KEY

(C) Cognitive

(P) Performance

\* These competencies should be included in the  
list for the postsecondary program ONLY.

## DRAFT RECOMMENDATIONS AS OF 1/1/86

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|                                                                    |                                   |
|--------------------------------------------------------------------|-----------------------------------|
| CURRICULUM FRAMEWORK                                               | PROGRAM AREA: <u>Industrial</u>   |
| FLORIDA DEPARTMENT OF EDUCATION                                    | EFFECTIVE DATE: <u>July, 1986</u> |
| PROGRAM TITLE: <u>Basic Automotive Body Repair and Refinishing</u> |                                   |
| CODE NUMBER: Secondary <u>8709000</u>                              | Postsecondary <u>          </u>   |
| Florida CIP <u>IN47.062300</u>                                     |                                   |

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|                                   |                                      |
|-----------------------------------|--------------------------------------|
| SECONDARY                         | POSTSECONDARY ADULT                  |
| SCHOOL CREDITS <u>6</u>           | VOCATIONAL CREDITS <u>          </u> |
| COLLEGE CREDITS <u>          </u> |                                      |

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APPLICABLE LEVEL(S): 7-9 9-12 Postsecondary Adult Vocational  
Postsecondary Vocational X Other ( 10-12, 21 )

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CERTIFICATION COVERAGE: AUTO IND @ 7 AUTO BODY 7

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- I. **MAJOR CONCEPTS/CONTENT:** The purpose of this program is to prepare students for employment as automobile body repairer helpers (807.687-010) and automotive painter helpers (845.684-014), or to provide supplemental training for persons previously or currently employed in these occupations.

The content includes, but is not limited to, communication skills, leadership skills, human relations and employability skills, safe and efficient work practices, basic trade skills, refinishing skills, sheet metal repair skills, related welding skills, use of plastic fillers, paint systems, undercoats, and minor miscellaneous repairs.

- II. LABORATORY ACTIVITIES: Shop or laboratory activities are an integral part of this program and provide instruction in use of hand and power tools, panel repairs, use of frame measurement equipment, application of fillers, paint systems, use of shop materials, glass replacement, and the use of MIG, oxyacetylene and plastic welders.
- III. SPECIAL NOTE: The Vocational Industrial Clubs of America, Inc., is an appropriate vocational student organization for providing communications, leadership, human relations, and employability training experiences and for reinforcing specific vocational skills. When provided, these activities are considered an integral part of this instructional program.

The cooperative method of instruction may be utilized for this program. Whenever the cooperative method is offered, the following is required for each student: a training plan which includes instructional objectives and a list of on-the-job and in-school learning experiences; a work station which reflects equipment, skills and tasks relevant to the occupation the student has chosen as a career goal.

When the cooperative education method of instruction is used, the program length for the secondary program may be increased by a maximum of 2.0 credits.

The typical length of this program for the average achieving student is 900 contact hours (1080 clock hours).

IV. INTENDED OUTCOMES: After successfully completing this program, the individual will be able to:

01. Demonstrate shop and occupational safety skills
02. Comprehend and comply with requirements concerning legal liability and consequent insurance implications
03. Prepare vehicles for repair and refinishing
04. Repair, replace, and adjust outer body panels
05. Prepare parts and panels for metal finishing
06. Prepare and apply plastic body-fillers
07. Perform welding operations
08. Inspect and repair frame-type vehicle bodies
09. Prepare surfaces for refinishing
10. Maintain and operate spray equipment
11. Select and apply appropriate paints and finishes
12. Diagnose and correct paint-application problems
13. Diagnose and correct finish defects
14. Perform miscellaneous repairs
15. Demonstrate employability skills



## STUDENT PERFORMANCE STANDARDS

## BASIC AUTOMOTIVE BODY REPAIR AND REFINISHING

- 01.0 DEMONSTRATE SHOP AND OCCUPATIONAL SAFETY SKILLS—The student will be able to:
- 01.001 Comply with safety rules regarding chemicals
  - 01.002 Comply with safety rules regarding personal clothing and devices
  - 01.003 Comply with safety rules regarding hand tools and power equipment
  - 01.004 Comply with shop safety rules and regulations
  - 01.005 Identify sources of airborne contamination and other hazards; take necessary steps to protect the health of the painter and other personnel
  - 01.006 Inspect air makeup and exhaust systems (including intake filters, exhaust filters, fans and other mechanical components of the system) to insure proper filtering and ventilation
  - 01.007 Identify career opportunities in auto body repair
  - 01.008 Explain requirements for continuing education in auto body repair

02.0 COMPREHEND AND COMPLY WITH REQUIREMENTS CONCERNING LEGAL LIABILITY  
AND CONSEQUENT INSURANCE IMPLICATIONS—The student will be able to:

02.001 Report deviations from work-order instructions and shop practices

03.0 PREPARE VEHICLES FOR REPAIR AND REFINISHING—The student will be able to:

03.001 Remove damaged outside trim and moldings

03.002 Remove damaged or necessary inside trim and moldings

03.003 Remove damaged, nonstructural body panels and components that may interfere with, or be damaged during, repair

03.004 Protect panels and parts adjacent to repair areas to prevent damage

03.005 Remove dirt, corrosion, undercoatings, sealers, and/or other protective coatings necessary to perform repairs to structural areas

03.006 Remove repairable plastics and other parts that are recommended for off-car repair

04.0 REPAIR, REPLACE, AND ADJUST OUTER BODY PANELS—The student will be able to:

- 04.001 Remove and replace a bolted panel or panel assembly
- 04.002 Remove and replace hoods, hood hinges, and hood latches
- 04.003 Remove and replace deck lids, lid hinges, and lid latches
- 04.004 Remove and replace doors, tailgates, hatches, liftgates, and hinges
- 04.005 Remove and replace bumpers, reinforcements, guards, isolators, and mounting hardware (release pressure from gas- and oil-filled energy-absorbing-type bumper isolators that are being discarded)
- 04.006 Check and adjust hood clearances to adjoining panels
- 04.007 Check and adjust deck lid, liftgate, and hatch clearances to adjoining panels
- 04.008 Check door-hinge condition; check door frames for square; check and adjust door clearances (where adjustable) along quarter panels, doors, rocker panels, fenders, and tops
- 04.009 Check and adjust latch assemblies on all hinged components
- 04.010 Check and adjust bumper clearances to adjacent body and filler panels
- 04.011 Straighten roughed-out contours of damaged panels to a surface condition for body filling or metal finishing
- 04.012 Weld cracked or torn steel body-panels; reweld broken welds

04.013 Cold-shrink stretched panel-areas back to contour

04.014 Restore protective coatings and sealants

05.0 PREPARE PARTS AND PANELS FOR METAL FINISHING—The student will be able to:

05.001 Identify specification(s) of metals used in automobiles

05.002 Identify heat effects on metals

05.003 Identify the importance of maintaining the structural integrity of an auto body

05.004 Grind the paint from the damaged area of a body panel

05.005 Pick and file the damaged area of a body panel to eliminate surface irregularities

05.006 Disc-sand the repaired body-panel to produce final smoothness

06.0 PREPARE AND APPLY PLASTIC BODY-FILLERS—The student will be able to:

06.001 Mix plastic filler

06.002 Apply plastic body-filler and cheese-grate during curing

06.003 Rough-sand cured plastic body-filler to contour, and then finish-sand

07.0 PERFORM WELDING OPERATIONS—The student will be able to:

07.001 Set up, operate, and maintain MIG, spot, oxyacetylene,  
and other welding equipment

08.0 INSPECT AND REPAIR FRAME-TYPE VEHICLE BODIES—The student will be  
able to:

08.001 Determine the extent of direct and indirect damage and the  
direction of impact, and plan methods and order of repairs

08.002 Clean, prime, and protective-coat repaired frame areas

08.003 Cold-shrink stretched panel-areas back to contour

08.004 Recheck panel contour and alignment after shaping and correct  
or adjust as necessary

09.0 PREPARE SURFACES FOR REFINISHING—The student will be able to:

09.001 Inspect and identify types of finishes and surface conditons  
and develop a plan for refinishing

09.002 Remove and store trim and molding

09.003 Remove dirt, wax, and road grime from areas to be refinished  
and from adjacent surfaces

09.004 Mask trim and other areas that will not be refinished

09.005 Remove paint finishes (chemically or mechanically)

- 09.006 Dry- or wet-sand areas to be refinished
- 09.007 Feather-edge broken areas to be refinished
- 09.008 Identify types of metals and apply suitable metal treatments
- 09.009 Mix primer, primer-surfacer, or primer-sealer and spray onto the surface of repaired areas
- 09.010 Apply glazing putty to pin-holes, scratches, and other minor surface imperfections
- 09.011 Dry- or wet-sand areas to which primer-surfacer and glazing putty have been applied
- 09.012 Compound around the edges of repaired areas to be refinished
- 09.013 Blow dust from areas to be refinished including cracks or moldings of adjacent areas
- 09.014 Clean area to be refinished with a proper solvent
- 09.015 Remove, with a tack rag, any dust or lint particles from the areas to be refinished
- 09.016 Apply suitable sealers to the areas being refinished when sealing is needed or desirable

10.0 MAINTAIN AND OPERATE SPRAY EQUIPMENT—The student will be able to:

- 10.001 Check and adjust air pressure at the spray gun
- 10.002 Adjust spray-gun fluid and pattern-control valves
- 10.003 Use appropriate spray techniques (gun arc, gun angle, gun distance, gun speed, and spray-pattern overlap) for the finish being applied



- 10.004 Inspect, clean, and determine the condition and adequacy of spray guns and related equipment (air hoses, regulators, air lines, and compressors)

11.0 SELECT AND APPLY APPROPRIATE PAINTS AND FINISHES—The student will be able to:

- 11.001 Select the proper spray mask, inspect the spray mask to insure proper fit and operation, and inspect the condition of the mask filters and other components
- 11.002 Determine the type and color of paint already on a vehicle
- 11.003 Shake, stir, thin or reduce, and strain paint
- 11.004 Apply acrylic enamel for panel repairs
- 11.005 Apply acrylic enamel for over-all refinishing
- 11.006 Apply acrylic lacquer for spot repairs
- 11.007 Apply acrylic lacquer for panel repairs
- 11.008 Check for color-matching of all applied materials
- 11.009 Sand, buff, and polish finishes where necessary
- 11.010 Identify the types of plastic parts to be finished and determine the proper refinishing procedure
- 11.011 Apply a finish coat to plastic parts
- 11.012 Clean, condition, and refinish vinyl (e.g. upholstery, dashes, and tops)
- 11.013 Clean and detail a vehicle after completion of refinishing

- 11.014 Apply stone-chip-resistant coatings to lower body areas
- 11.015 Restore corrosion-resistant coatings, caulking, and seam sealers to repaired areas

12.0 DIAGNOSE AND CORRECT PAINT-APPLICATION PROBLEMS—The student will be able to:

- 12.001 Identify blistering or raising of the paint surface, determine the cause(s), and correct the condition
- 12.002 Identify blushing (milky or dull mist-formation), determine the cause(s), and correct the condition
- 12.003 Identify bull's-eye effects in the paint surface, determine the cause(s), and correct the condition
- 12.004 Identify crow's-feet or crazing appearance in the paint surface, determine the cause(s), and correct the condition
- 12.005 Check for dirt in the painted surface, determine the source(s), and correct the condition
- 12.006 Identify a dry-spray pattern in the paint surface, determine the cause(s), and correct the condition
- 12.007 Identify the appearance of fisheyes in the finish after it has been applied, determine the cause(s), and correct the condition
- 12.008 Identify lifting (surface distortion or shriveling) while the topcoat is being applied, identify the cause(s), and correct the condition

- 12.009 Identify molting (or streaking) in metallic-paint finishes, determine the cause(s), and correct the condition
- 12.010 Identify the orange-peel appearance of the refinished surface, determine the cause(s), and correct the condition
- 12.011 Identify overspray resulting from overlap, determine the cause(s), and correct the condition
- 12.012 Identify a pin-holing (solvent-popping) appearance in a freshly-painted surface, determine the cause(s), and correct the condition
- 12.013 Identify sags and runs in paint surfaces, determine the cause(s), and correct the condition
- 12.014 Identify sand-scratch swelling, determine the cause(s), and correct the condition
- 12.015 Identify shrinking or splitting while the finish is drying around repaired areas, determine the cause(s), and correct the condition
- 12.016 Identify tape-tracking, determine the cause(s), and correct the condition
- 12.017 Identify bleeding, determine the cause(s), and correct the condition

13.0 DIAGNOSE AND CORRECT FINISH DEFECTS—The student will be able to:

- 13.001 Identify poor adhesion, determine the cause(s), and take action to correct the condition

- 13.002 Identify paint-cracking (crow's-feet or line-checking, micro-checking, etc.) and take action to correct the condition
- 13.003 Identify the orange-peel appearance of a finished surface and take action to correct the condition
- 13.004 Check for rust spots on the surface, determine the cause(s), and take action to correct the condition
- 13.005 Identify a pin-holing (solvent-popping) or blistering appearance in paint surfaces, determine the cause(s), and take action to correct the condition
- 13.006 Identify water-spotting on paint surfaces and take action to correct the condition
- 13.007 Identify wrinkling of enamel and take action to correct the condition
- 13.008 Identify buffing-wheel burns on a painted surface, determine the cause(s), and take action to correct the condition
- 13.009 Identify finish damage caused by bird droppings, tree sap, and other natural causes and take action to correct the condition
- 13.010 Identify finish damage caused by airborne overspray, acids, soot, and other industrial-related causes and take action to correct the condition
- 13.011 Identify die-back conditions (both dulling of the paint film showing haziness and film distortion showing shrinking) and take action to correct the condition
- 13.012 Identify chalking (or oxidation) and take action to correct the condition

14.0 PERFORM MISCELLANEOUS REPAIRS—The student will be able to:

- 14.001 Inspect, adjust, repair, or replace window regulators, run channels, glass, power mechanisms, and related controls
- 14.002 Diagnose and repair water leaks, dust leaks, and wind noises
- 14.003 Inspect, repair, or replace weatherstripping
- 14.004 Inspect, remove, and replace all stationary glass (including windshields, back lights, etc.) using manufacturers' recommended installation materials and procedures
- 14.005 Repair damaged circuits and wires
- 14.006 Align headlamps
- 14.007 Apply rust-repair methods including grinding, sandblasting, and metal preparation
- 14.008 Detail and clean up a car after job completion

15.0 DEMONSTRATE EMPLOYABILITY SKILLS—The student will be able to:

- 15.001 List sources of job openings other than public or private employment agencies
- 15.002 Write a letter of application for a job
- 15.003 Prepare a resume or personal fact sheet
- 15.004 List factors to consider when applying for a job
- 15.005 List ways of making contact with employers
- 15.006 Identify documents which may be required when applying for a job interview

- 15.007 Complete a job application form correctly
- 15.008 Identify appropriate dress and grooming for a job interview
- 15.009 Classify behaviors considered to be appropriate or inappropriate in a job-interview situation
- 15.010 Describe advantages to the employer and employee of being a productive worker
- 15.011 Explain the purpose of supervision, self-discipline, and performance evaluation
- 15.012 Identify appropriate response(s) to criticism from employer, supervisor, or other employees
- 15.013 List consequences of frequently being absent from the job
- 15.014 List consequences of frequently arriving late for work
- 15.015 List factors to consider when resigning from a job
- 15.016 Write a letter of resignation
- 15.017 Observe the principles of honesty and integrity with employers, customers, and fellow workers



## DRAFT RECOMMENDATIONS AS OF 1/1/86

CURRICULUM FRAMEWORK PROGRAM AREA: Industrial

FLORIDA DEPARTMENT OF EDUCATION EFFECTIVE DATE: July, 1986

PROGRAM TITLE: Automotive Body Repair and Refinishing

CODE NUMBER: Secondary \_\_\_\_\_ Postsecondary ARR0900

Florida CIP IN47.060300

|                      |                       |                          |
|----------------------|-----------------------|--------------------------|
| SECONDARY            |                       | POSTSECONDARY ADULT      |
| SCHOOL CREDITS _____ | COLLEGE CREDITS _____ | VOCATIONAL CREDITS _____ |

APPLICABLE LEVEL(S): ☐ 7-9 ☐ 9-12 ☐ Postsecondary Adult Vocational  
☐ Postsecondary Vocational ☒ Other ( 13-17 )

CERTIFICATION COVERAGE: AUTO IND @ 7      AUTO BODY 7

I. MAJOR CONCEPTS/CONTENT: The purpose of this program is to prepare students for employment as automobile body repairers (807.391-010), automotive painters (845.381-014), automobile body repairer helpers (807.687-010), and automotive painter helpers (845.684-014), or to provide supplemental training for persons previously or currently employed in these occupations.

The content includes, but is not limited to, communication skills, leadership skills, human relations and employability skills, safe and efficient work practices, basic trade skills, refinishing skills, sheet metal repair skills, frame and unibody squaring and aligning, use of fillers, paint systems and undercoats, related welding skills,

related mechanical skills, trim-hardware maintenance, glass servicing, and other miscellaneous repairs.

II. LABORATORY ACTIVITIES: Shop or laboratory activities are an integral part of this program and provide instruction in, but are not limited to, use of hand and power tools, panel repairs, use of spray equipment, use of frame and alignment equipment, application of body fillers, paint systems, use of shop materials, glass replacement, and the use of MIG, oxyacetylene, and plastic welders.

III. SPECIAL NOTE: The Vocational Industrial Clubs of America, Inc., is an appropriate vocational student organization for providing communications, leadership, human relations, and employability training experiences and for reinforcing specific vocational skills. When provided, these activities are considered an integral part of this instructional program.

The cooperative method of instruction may be utilized for this program. Whenever the cooperative method is offered, the following is required for each student: a training plan which includes instructional objectives and a list of on-the-job and in-school learning experiences; a work station which reflects equipment, skills and tasks relevant to the occupation the student has chosen as a career goal.

In accordance with Section 240.149 F.S., the minimum basic skills grade level required for this postsecondary adult vocational program is: Mathematics 7.0, Language 7.0. This grade level number corresponds to a grade equivalent score obtained on a state designated basic skills examination.

The typical length of this program for the average achieving student is 1800 contact hours (2160 clock hours).

IV. INTENDED OUTCOMES: After successfully completing this program, the individual will be able to:

01. Demonstrate shop and occupational safety skills
02. Comprehend and comply with requirements concerning legal liability and consequent insurance implications
03. Prepare vehicles for repair and refinishing
04. Repair, replace, and adjust outer body panels
05. Prepare parts and panels for metal finishing
06. Prepare and apply body-fillers
07. Repair fiber glass and plastic components
08. Perform welding operations
09. Operate diagnostic equipment
10. Inspect, measure, and repair unibody vehicles
11. Inspect and repair frame-type vehicle bodies
12. Prepare surfaces for refinishing
13. Maintain and operate spray equipment

14. Select and apply appropriate paints and finishes
15. Diagnose and correct paint-application problems
16. Diagnose and correct finish defects
17. Perform miscellaneous repairs
18. Demonstrate employability skills

## STUDENT PERFORMANCE STANDARDS

## AUTOMOTIVE BODY REPAIR AND REFINISHING

01.0 DEMONSTRATE SHOP AND OCCUPATIONAL SAFETY SKILLS--The student will be able to:

- 01.001 Comply with safety rules regarding chemicals
- 01.002 Comply with safety rules regarding personal clothing and devices
- 01.003 Comply with safety rules regarding hand tools and power equipment
- 01.004 Comply with shop safety rules and regulations
- 01.005 Identify sources of airborne contamination and other hazards; take necessary steps to protect the health of the painter and other personnel
- 01.006 Inspect air makeup and exhaust systems (including intake filters, exhaust filters, fans and other mechanical components of the system) to insure proper filtering and ventilation
- 01.007 Identify career opportunities in auto body repair
- 01.008 Explain requirements for continuing education in auto body repair

02.0 COMPREHEND AND COMPLY WITH REQUIREMENTS CONCERNING LEGAL LIABILITY AND CONSEQUENT INSURANCE IMPLICATIONS—The student will be able to:

- 02.001 Identify legal and liability implications
- 02.002 Identify conditions which represent fraud
- 02.003 Report deviations from work-order instructions and shop practices
- 02.004 Compare and match adjustor's estimates to work orders to recognize deviations

03.0 PREPARE VEHICLES FOR REPAIR AND REFINISHING—The student will be able to:

- 03.001 Diagnose and analyze damage to determine appropriate methods for over-all repair
- 03.002 Remove damaged outside trim and moldings
- 03.003 Remove damaged or necessary inside trim and moldings
- 03.004 Remove damaged, nonstructural body panels and components that may interfere with, or be damaged during, repair
- 03.005 Remove all vehicle mechanical components that may interfere with, or be damaged during, repair; replace after repair
- 03.006 Protect panels and parts adjacent to repair areas to prevent damage



03.007 Remove dirt, corrosion, undercoatings, sealers, and/or other protective coatings necessary to perform repairs to structural areas

03.008 Remove repairable plastics and other parts that are recommended for off-car repair

04.0 REPAIR, REPLACE, AND ADJUST OUTER BODY PANELS—The student will be able to:

04.001 Remove and replace a bolted panel or panel assembly

04.002 Remove and replace a welded sheet-metal panel or panel assembly

04.003 Remove and replace a welded aluminum panel or panel assembly

04.004 Remove and replace hoods, hood hinges, and hood latches

04.005 Remove and replace deck lids, lid hinges, and lid latches

04.006 Remove and replace doors, tailgates, hatches, liftgates, and hinges

04.007 Remove and replace bumpers, reinforcements, guards, isolators, and mounting hardware (release pressure from gas- and oil-filled energy-absorbing-type bumper isolators that are being discarded)

04.008 Check and adjust hood clearances to adjoining panels

04.009 Check and adjust deck lid, liftgate, and hatch clearances to adjoining panels

- 04.010 Check door-hinge condition; check door frames for square; check and adjust door clearances (where adjustable) along quarter panels, doors, rocker panels, fenders, and tops
- 04.011 Check and adjust latch assemblies on all hinged components
- 04.012 Check and adjust bumper clearances to adjacent body and filler panels
- 04.013 Straighten roughed-out contours of damaged panels to a surface condition for body filling or metal finishing
- 04.014 Weld cracked or torn steel body-panels; reweld broken welds
- 04.015 Heat-shrink stretched panel-areas back to contour
- 04.016 Cold-shrink stretched panel-areas back to contour
- 04.017 Restore protective coatings and sealants
- 04.018 Braze body-panels only in locations recommended by vehicle manufacturers
- 04.019 Repair or replace door skins and intrusion beams

05.0 PREPARE PARTS AND PANELS FOR METAL FINISHING—The student will be able to:

- 05.001 Identify specification(s) of metals used in automobiles
- 05.002 Identify heat effects on metals
- 05.003 Identify the importance of maintaining the structural integrity of an auto body

- 05.004 Grind the paint from the damaged area of a body panel
- 05.005 Pick and file the damaged area of a body panel to eliminate surface irregularities
- 05.006 Disc-sand the repaired body-panel to produce final smoothness

06.0 PREPARE AND APPLY BODY-FILLERS--The student will be able to:

- 06.001 Mix plastic filler
- 06.002 Apply plastic body-filler and cheese-grate during curing
- 06.003 Rough-sand cured plastic body-filler to contour, and then finish-sand
- 06.004 Tin surfaces to be leaded with acid, ruby fluid, etc.  
(OPTIONAL)
- 06.005 Clean surfaces of body panels to avoid trapping acid under the lead (OPTIONAL)
- 06.006 Neutralize the tinning-agent acid (OPTIONAL)
- 06.007 Clean and file surfaces of body panels for solder filling  
(OPTIONAL)
- 06.008 Apply and paddle body-solder (OPTIONAL)
- 06.009 Grind and file body-solder to contour, then finish-sand  
(OPTIONAL)

07.0 REPAIR FIBER GLASS AND PLASTIC COMPONENTS—The student will be able to:

- 07.001 Repair deep gouges and cracks in fiber glass panels
- 07.002 Repair holes in fiber glass panels
- 07.003 Replace fiber glass body-panels and straighten/align panel supports
- 07.004 Remove damaged areas from fiber glass panels and repair with partial-panel installation
- 07.005 Identify the type of plastic to be repaired and the appropriate repair procedure (including hot-air welding, chemical bonding, and the use of structural adhesives)
- 07.006 Prepare the surfaces of, and repair damage to, thermoplastic parts
- 07.007 Prepare the surfaces of, and repair damage to, thermosetting-plastic parts

08.0 PERFORM WELDING OPERATIONS—The student will be able to:

- 08.001 Set up, operate, and maintain MIG, spot, oxyacetylene, and other welding equipment
- 08.002 Apply basic metal applications
- 08.003 Comply with manufacturers' specifications for joining metal

09.0 OPERATE DIAGNOSTIC EQUIPMENT--The student will be able to:

09.001 Recognize types of diagnostic equipment

09.002 Diagnose and measure frame damage using self-centering gauges

09.003 Diagnose and measure frame damage using a tram gauge

09.004 Diagnose and measure frame damage using a datum-line gauge

10.0 INSPECT, MEASURE, AND REPAIR UNIBODY VEHICLES--The student will be able to:

10.001 Recognize that measuring, dimensioning, and tolerance limits in unibody vehicles are critical to repair of these vehicles, and that suspension mount-points and engine power-train attaching-points are critical to vehicle 4-wheel alignment (potential vibration and steering problems can result if these are improperly positioned) and adjust these in accordance with vehicle manufacturers' recommendations

10.002 Recognize that bent or damaged steering, suspension, and power-train components can cause vibration, steering, and 4-wheel alignment problems and replace them in accordance with vehicle manufacturers' recommendations

10.003 Diagnose and measure unibody damage using self-centering gauges

- 10.004 Diagnose and measure unibody damage using a tram gauge
- 10.005 Diagnose and measure unibody damage using a datum-line gauge
- 10.006 Determine the location of all suspension, steering, and power-train component attaching-points to the body
- 10.007 Diagnose and measure unibody damage using a dedicated (fixture) measuring system
- 10.008 Diagnose and measure unibody damage using a universal measuring system or a laser
- 10.009 Determine the extent of the direct and indirect damage and the direction of impact, and plan the method and order of repair
- 10.010 Attach proper body-anchoring devices
- 10.011 Straighten and align cowl assemblies
- 10.012 Straighten and align roof pillars and roof panels
- 10.013 Straighten and align door posts
- 10.014 Straighten and align door sills, floor pans, and rocker panels
- 10.015 Straighten and align quarter panels, wheel-house assemblies, and rear body-sections (including rail, suspension, and power-train mounting-points)
- 10.016 Straighten/align front-end sections (aprons, strut towers, upper/lower rails, steering, suspension, and power-train mounting-points, etc.)
- 10.017 Recognize the limitations of applying heat to high-strength steel structural components, use proper heat-stress relief methods on high-strength steel, and weld in accordance with vehicle manufacturers' recommendations
- 10.018 Use proper cold-stress relief methods



- 10.019 Remove folds, curves, creases, and dents using power tools and hand tools to restore damaged areas to proper contours and dimensions
- 10.020 Determine the extent of damage to structural-steel body panels and repair, weld, or replace them in accordance with manufacturers' specifications
- 10.021 Determine the extent of damage to structural-aluminum body panels and repair, weld, or replace them in accordance with manufacturers' specifications
- 10.022 Cut out damaged sections of structural steel body-panels and weld in replacements in accordance with manufacturers' specifications
- 10.023 Cut out damaged sections of structural aluminum body-panels and weld in replacements in accordance with manufacturers' specifications
- 10.024 Recheck panel contour and alignment after shaping, and correct or adjust as necessary
- 10.025 Clean, prime, and protective-coat repaired unibody structural areas

11.0 INSPECT AND REPAIR FRAME-TYPE VEHICLE BODIES—The student will be able to:

- 11.001 Determine the extent of direct and indirect damage and the direction of impact, and plan methods and order of repairs

- 11.002 Straighten and align mash damage
- 11.003 Straighten and align sag damage
- 11.004 Straighten and align sidesway damage
- 11.005 Straighten and align twist damage
- 11.006 Straighten and align kickup damage
- 11.007 Straighten and align broadside damage
- 11.008 Straighten and align diamond frame damage
- 11.009 Remove and replace damaged frame horns, side rails, cross members, and front or rear frame-sections, and weld cracks in frame members
- 11.010 Clean, prime, and protective-coat repaired frame areas
- 11.011 Repair, reinforce, or replace weakened frame members in accordance with vehicle manufacturers' recommendations
- 11.012 Straighten and align cowl assemblies
- 11.013 Straighten and align roof pillars and roof panels
- 11.014 Straighten and align door posts
- 11.015 Straighten and align door sills, floor pans, and rocker panels
- 11.016 Straighten and align quarter panels, wheel-house assemblies, and rear body-sections
- 11.017 Remove folds, curves, creases, and dents using power tools and hand tools to restore damaged areas to proper contours and dimensions
- 11.018 Weld cracked or torn sheet-steel body-panels and reweld broken welds
- 11.019 Weld cracked or torn aluminum body-panels and reweld broken welds

- 11.020 Cut out damaged sections of sheet-steel body-panels and weld in replacements
- 11.021 Cut out damaged sections of aluminum body-panels and weld in replacements
- 11.022 Heat-shrink stretched panel-areas back to contour
- 11.023 Cold-shrink stretched panel-areas back to contour
- 11.024 Recheck panel contour and alignment after shaping and correct or adjust as necessary

12.0 PREPARE SURFACES FOR REFINISHING--The student will be able to:

- 12.001 Inspect and identify types of finishes and surface conditons and develop a plan for refinishing
- 12.002 Remove and store trim and molding
- 12.003 Remove dirt, wax, and road grime from areas to be refinished and from adjacent surfaces
- 12.004 Mask trim and other areas that will not be refinished
- 12.005 Remove paint finishes (chemically or mechanically)
- 12.006 Dry- or wet-sand areas to be refinished
- 12.007 Feather-edge broken areas to be refinished
- 12.008 Identify types of metals and apply suitable metal treatments
- 12.009 Mix primer, primer-surfacer, or primer-sealer and spray onto the surface of repaired areas

- 12.010 Apply glazing putty to pin-holes, scratches, and other minor surface imperfections
- 12.011 Dry- or wet-sand areas to which primer-surfacer and glazing putty have been applied
- 12.012 Compound around the edges of repaired areas to be refinished
- 12.013 Blow dust from areas to be refinished including cracks or moldings of adjacent areas
- 12.014 Clean area to be refinished with a proper solvent
- 12.015 Remove, with a tack rag, any dust or lint particles from the areas to be refinished
- 12.016 Apply suitable sealers to the areas being refinished when sealing is needed or desirable

13.0 MAINTAIN AND OPERATE SPRAY EQUIPMENT—The student will be able to:

- 13.001 Check and adjust air pressure at the spray gun
- 13.002 Adjust spray-gun fluid and pattern-control valves
- 13.003 Use appropriate spray techniques (gun arc, gun angle, gun distance, gun speed, and spray-pattern overlap) for the finish being applied
- 13.004 Inspect, clean, and determine the condition and adequacy of spray guns and related equipment (air hoses, regulators, air lines, and compressors)

14.0 SELECT AND APPLY APPROPRIATE PAINTS AND FINISHES—The student will be able to:

- 14.001 Select the proper spray mask, inspect the spray mask to insure proper fit and operation, and inspect the condition of the mask filters and other components
- 14.002 Determine the type and color of paint already on a vehicle
- 14.003 Shake, stir, thin or reduce, and strain paint
- 14.004 Apply acrylic enamel for spot repairs
- 14.005 Apply acrylic enamel for panel repairs
- 14.006 Apply acrylic enamel for over-all refinishing
- 14.007 Apply polyurethane enamel for panel and over-all refinishing
- 14.008 Apply alkyd enamel for panel and over-all refinishing
- 14.009 Apply acrylic lacquer for spot repairs
- 14.010 Apply acrylic lacquer for panel repairs
- 14.011 Apply acrylic lacquer for over-all refinishing
- 14.012 Check for color-matching of all applied materials
- 14.013 Apply acrylic-lacquer clearcoat for spot repairs
- 14.014 Apply acrylic-lacquer clearcoat for panel and over-all repairs
- 14.015 Apply enamel clearcoat for spot repairs
- 14.016 Apply enamel clearcoat for panel and over-all repairs
- 14.017 Sand, buff, and polish finishes where necessary
- 14.018 Identify the types of plastic parts to be finished and determine the proper refinishing procedure
- 14.019 Apply a finish coat to plastic parts

- 14.020 Clean, condition, and refinish vinyl (e.g. upholstery, dashes, and tops)
- 14.021 Clean and detail a vehicle after completion of refinishing
- 14.022 Apply stone-chip-resistant coatings to lower body areas
- 14.023 Restore corrosion-resistant coatings, caulking, and seam sealers to repaired areas
- 14.024 Apply decals, transfers, tapes, wood-grains, pinstripings (painted and taped), etc.

15.0 DIAGNOSE AND CORRECT PAINT-APPLICATION PROBLEMS—The student will be able to:

- 15.001 Identify blistering or raising of the paint surface, determine the cause(s), and correct the condition
- 15.002 Identify blushing (milky or dull mist-formation), determine the cause(s), and correct the condition
- 15.003 Identify bull's-eye effects in the paint surface, determine the cause(s), and correct the condition
- 15.004 Identify crow's-feet or crazing appearance in the paint surface, determine the cause(s), and correct the condition
- 15.005 Check for dirt in the painted surface, determine the source(s), and correct the condition
- 15.006 Identify a dry-spray pattern in the paint surface, determine the cause(s), and correct the condition



- 15.007 Identify the appearance of fisheyes in the finish after it has been applied, determine the cause(s), and correct the condition
- 15.008 Identify lifting (surface distortion or shriveling) while the topcoat is being applied, identify the cause(s), and correct the condition
- 15.009 Identify molting (or streaking) in metallic-paint finishes, determine the cause(s), and correct the condition
- 15.010 Identify the orange-peel appearance of the refinished surface, determine the cause(s), and correct the condition
- 15.011 Identify overspray resulting from overlap, determine the cause(s), and correct the condition
- 15.012 Identify a pin-holing (solvent-popping) appearance in a freshly-painted surface, determine the cause(s), and correct the condition
- 15.013 Identify sags and runs in paint surfaces, determine the cause(s), and correct the condition
- 15.014 Identify sand-scratch swelling, determine the cause(s), and correct the condition
- 15.015 Identify shrinking or splitting while the finish is drying around repaired areas, determine the cause(s), and correct the condition
- 15.016 Identify that a color-coat is off-shade or does not match, determine the cause(s), and correct the condition
- 15.017 Identify tape-tracking, determine the cause(s), and correct the condition

15.018 Identify bleeding, determine the cause(s), and correct the condition

16.0 DIAGNOSE AND CORRECT FINISH DEFECTS—The student will be able to:

- 16.001 Identify poor adhesion, determine the cause(s), and take action to correct the condition
- 16.002 Identify paint-cracking (crow's-feet or line-checking, micro-checking, etc.) and take action to correct the condition
- 16.003 Identify the orange-peel appearance of a finished surface and take action to correct the condition
- 16.004 Check for rust spots on the surface, determine the cause(s), and take action to correct the condition
- 16.005 Identify a pin-holing (solvent-popping) or blistering appearance in paint surfaces, determine the cause(s), and take action to correct the condition
- 16.006 Identify water-spotting on paint surfaces and take action to correct the condition
- 16.007 Identify wrinkling of enamel and take action to correct the condition
- 16.008 Identify buffing-wheel burns on a painted surface, determine the cause(s), and take action to correct the condition
- 16.009 Identify finish damage caused by bird droppings, tree sap, and other natural causes and take action to correct the condition

- 16.010 Identify finish damage caused by airborne overspray, acids, soot, and other industrial-related causes and take action to correct the condition
- 16.011 Identify die-back conditions (both dulling of the paint film showing haziness and film distortion showing shrinking) and take action to correct the condition
- 16.012 Identify chalking (or oxidation) and take action to correct the condition

17.0 PERFORM MISCELLANEOUS REPAIRS—The student will be able to:

- 17.001 Inspect, adjust, repair, or replace window regulators, run channels, glass, power mechanisms, and related controls
- 17.002 Repair/replace all power-driven accessories and related controls (including electrically-heated glass)
- 17.003 Diagnose and repair water leaks, dust leaks, and wind noises
- 17.004 Inspect, repair, or replace weatherstripping
- 17.005 Inspect, remove, and replace all stationary glass (including windshields, back lights, etc.) using manufacturers' recommended installation materials and procedures
- 17.006 Inspect, repair or replace, and adjust removable manually-operated or electrically-operated roof panels, hinges, latches, guides, handles, retainers, and controls of sun roofs
- 17.007 Inspect, repair, and replace convertible tops and related mechanisms (OPTIONAL)

- 17.008 Remove and replace vinyl tops
- 17.009 Repair damaged circuits and wires
- 17.010 Remove, replace, and cap off air-conditioner components
- 17.011 Evacuate and recharge air conditioning systems
- 17.012 Identify procedures to remove and replace engines and mounts
- 17.013 Identify procedures to remove and replace transmissions  
and mounts
- 17.014 Identify procedures to remove and replace suspension parts
- 17.015 Identify procedures to remove and replace brake parts
- 17.016 Identify procedures to bleed brakes
- 17.017 Identify procedures to remove and replace fuel system  
components
- 17.018 Identify procedures to perform front-end alignment
- 17.019 Align headlamps
- 17.020 Apply rust-repair methods including grinding, sandblasting,  
and metal preparation
- 17.021 Install metal inserts; epoxy, fiber glass or suitable fillers;  
and undercoating
- 17.022 Detail and clean up a car after job completion

18.0 DEMONSTRATE EMPLOYABILITY SKILLS—The student will be able to:

- 18.001 List sources of job openings other than public or private  
employment agencies
- 18.002 Write a letter of application for a job

- 18.003 Prepare a resume or personal fact sheet
- 18.004 List factors to consider when applying for a job
- 18.005 List ways of making contact with employers
- 18.006 Identify documents which may be required when applying for a job interview
- 18.007 Complete a job application form correctly
- 18.008 Identify appropriate dress and grooming for a job interview
- 18.009 Classify behaviors considered to be appropriate or inappropriate in a job interview situation
- 18.010 Describe advantages to the employer and employee of being a productive worker
- 18.011 Explain the purpose of supervision, self-discipline, and performance evaluation
- 18.012 Identify appropriate response(s) to criticism from employer, supervisor, or other employees
- 18.013 List consequences of frequently being absent from the job
- 18.014 List consequences of frequently arriving late for work
- 18.015 List factors to consider when resigning from a job
- 18.016 Write a letter of resignation
- 18.017 Observe the principles of honesty and integrity with employers, customers, and fellow workers
- 18.018 Qualify for certification by passing the ASE written test

### INSTRUCTIONAL APPROACH

Local decisions must be made by school administrators & teachers concerning the appropriate methods to use to deliver instruction & measure student achievement. In many instances, a mix of various instructional approaches may be deemed appropriate to present instruction in a comprehensive and efficient manner. It is the teacher's responsibility to ensure that students learn how to competently perform the tasks specified in the course objectives. The teacher must lead the students through the learning experiences in a course. This leadership role requires the teacher to motivate students to aggressively pursue learning activities. The teacher must select the methods of instruction that best apply to the students ability levels and that allow the teacher to control the learning processes, to measure student achievement, and to provide feedback to the student.

### KEY FACTORS TO CONSIDER

#### —Student Characteristics

Adolescent - Immature students need constant control, a high degree of motivational leadership, and relatively simple learning activities.

Adult - Mature students are more often self-motivated, need less control, and can accept complex learning activities.

Prerequisites - Can the student read, write, calculate mathematics, and understand English language at the ability level required to complete learning activities.



### —Teacher Characteristics

Subject Knowledge - The teacher must be a subject matter expert—must be able to teach instructional concepts and evaluate student performance. Should have significant amount of experience actually working in industry/vocational area.

Instructional Delivery - The teacher must motivate and lead the student as well as know how to organize and present various types of instruction. Innovative instructional methods should not be attempted if the instructor is not qualified to use them.

Instructional Development - Teachers must select materials, and often develop their own materials, to be used by students. The materials used must support the methods of delivery. The teacher must be qualified to select and develop course materials, or else use instructional packages developed by other qualified sources.

Instructional Measurement - Teachers must select testing methods that support the instructional delivery system used. Teachers must be qualified to develop, administer, and evaluate both written and performance type tests.

### —Instructional Setting Characteristics

Time Constraints - Traditional methods of instruction in school systems are controlled by the time periods available. Instruction must be made to fit the time available for training unless the time constraints are removed. If time constraints are not a factor, innovative methods of instruction may be appropriate such as:

- open-entry/open-exit
- self-paced/independent study
- computer based instruction

- competency based instruction

Facilities and Equipment - Instructional methods selected must take into consideration the space available, the number of work stations for students and the amount of tools and equipment available for student use.

**CONVENTIONAL INSTRUCTIONAL METHODS:**

Any given course of instruction may require some instruction to be presented in a standard lecture or controlled demonstration format. These methods of instruction can be easily combined with instructor controlled step-by-step practical exercises. Some instructional activities may dictate that this instructional approach be used to introduce students to hazardous equipment often utilized in vocational training. In most situations, students should be required to perform specified activities to achieve skill competency. If mastery of a task is required, competency-based education methods may be more appropriate. If the training activity involves an orientation or a seldom performed nonessential task, conventional instructional methods are acceptable.

**COMPETENCY-BASED VOCATIONAL EDUCATION INSTRUCTIONAL METHODS:**

The focus of Competency-based Vocational Education (CBVE) is to ensure that each student can competently perform tasks specified in an objective statement. Competency-based instruction can be included in conventional instructional settings as well as innovative settings. CBVE does not require self-paced/individualized methods of instructional delivery to be used as the only means for CBVE instruction.

# CBVE PRINCIPLES AND CHARACTERISTICS

1. The curriculum is based on well defined, job related tasks or competencies. The curriculum should be designed to have students do things, not just read resources, or view AV materials.
2. Each period or unit of instruction contains a performance objective, stated in terms of observable, measurable activities.
3. Teachers provide students with a list of the performance objectives, the standards to be met and other performance criteria.
4. Teachers may utilize any appropriate method of instruction to present the subject matter to students. Teachers can mix various methods together in any given program, or course, or unit of instruction, to achieve the most efficient means for the students to learn the subject matter and competently perform the task as specified in the objective. Possible methods of instruction used in CBVE programs may include:
  - Group paced lectures and demonstrations.
  - Instructor controlled practice activities.
  - Self-paced instruction for individual learning activities and repeated practice.
  - Small group or team teaching methods where several students work together on a piece of equipment or a project, or activity.

5. Teachers must have a method of recording each student's achievement for each performance objective. This can be in the form of a record book, or a progress chart, a check off sheet, or a series of well planned performance tests.
6. Teachers must inform each student that they have either met the criteria specified for each performance objective or they have not adequately performed the task. The student must be informed of any inadequate performance and provided the opportunity and resources to practice performing the task until adequate performance is attained. This is probably the most difficult aspect of managing CBVE instruction, for it requires the teacher to individually coach or tutor a student for a controlled period of time, requiring the student to practice performing the task several times, and ultimately making the decision that the student is either competent at the task or not competent. The teacher may limit the time allowed for repeated task practice.
7. Student performance is evaluated in comparison to the standards and performance criteria stated in the objective, not to the performances of other students. If performance meets the standard, the student passes the objective 100%. If the student does not meet all the criteria specified, the student is not 100% competent in performance of the task and should not be given credit for completing the task. The student can be given an incomplete grade if continued attempts will be made to pass the objective.

8. Teachers may use both performance tests and written tests to determine competency. Written tests can be used to measure knowledge of performance procedures, equipment identification, math and science abilities, etc. Performance tests can be used for actual student performance of a task, to a prescribed standard, under specified conditions.

#### CBVE GOALS

The goal of Competency-Based Vocational Education is to have all students reach the specified standard of competency. Instructional methods, quantity of instruction, and performance evaluation methods will vary according to the instructional situation. CBVE instruction allows for the use of a multitude of instructional resources and procedures, including individual self-paced units of instruction to allow the student to master the objective. This approach differs from traditional instruction in which all students use the same materials and spend the same amount of time in a course where student achievement is expected to vary—not the instructional approach.

#### TEACHER AND STUDENT ROLES IN CBVE

The requirements of competency-based vocational education have major implications for the roles that teachers and students perform and for the kinds of skills that teachers need. In competency-based settings, teachers must not only be dispensers of information; but they must also become managers of a variety of instructional resources that they select and use to tailor instruction to the needs of individual learners. Teachers spend

less time providing content information and much more time helping individuals master objectives. In a competency-based setting, the teacher may present some group instruction as well as develop alternative resources, and function as a tutor and a counselor, a diagnostician of learner needs, a prescriber of instructional experience, and an evaluator of competent performance.

The teacher in this setting has, then, a more complex, varied, and rewarding role than ever before. Teachers need to be able to design their course or programs around measureable, job-related skills and to ensure that these skills are, indeed, necessary for obtaining and keeping a job. They must be able to state objectives clearly and in a way that permits objective measurement. Teachers must be able to carry out this measurement in a way that accurately assesses student achievement and that exactly reflects what the competency really involves.

Teachers must also be able to adapt their instruction to individual learning needs so that each student can acquire the competencies (s)he needs. This ability to tailor instruction demands knowledge of a wide variety of individualization strategies, as well as skill in applying these strategies systematically.

A major assumption underlying CBVE is that students who are actively involved in carrying out their programs of study will learn more and retain more than students who passively accept information fed to them. Thus, an important part of the teacher's job is to encourage students to assume more and more responsibility for their own learning.

Because students are doing many different kinds of things, and because the teacher must coordinate the activities of all the students in a course, the



individual student's role inevitably involves more responsibility than it does in traditional settings.

Many of the basic management tasks that teachers formerly undertook by themselves—tasks such as record keeping, monitoring student progress, and monitoring the use of resources—must become the joint responsibility of teachers and students in a competency-based setting.

Some teachers worry that giving students more responsibility will result in a loss of teacher control. On the contrary, however, most teachers find that they have more control in a competency-based setting than in a traditional, group-oriented setting. The teacher has, after all, designed the system or environment in which students must operate; without the teacher there to manage the overall system, it would soon cease to function.

#### INSTRUCTIONAL CONCEPTS:

Instruction should be systematic and reflect program goals. A list of competencies and specific performance objectives with criterion-referenced measures should be used.

1. Program Plan

The training program should progress in logical steps and provide for alternate sequences, where applicable.

2. Student training plan

A training plan for each student should be used, indicating the student's training goal(s) and specific steps needed to meet each goal. Every student should be given a copy of his/her training plan.

3. Preparation Time

Adequate time should be provided for teacher preparation and

program development and/or modification.

#### 4. Teaching Load

The instructor/student ratio and class contact hours should allow time for interaction on a small-group and a one-to-one basis.

#### 5. Curriculum

a. The specific competencies in the Career MAP Competency List should be included in each area of program-specific instruction. Additional competencies may be added to meet the needs of local employers. All additional competencies should be approved by the program advisory committee.

b. Instructions on the legal aspects and responsibilities in areas such as Environmental Protection Agency regulations, safety regulations, OSHA regulations, and other appropriate requirements should be included in the curriculum.

Instruction and practice in filling out work order forms, ordering parts or supplies, and basic record-keeping should be a part of the training program.

#### 6. Student Progress

A record of each student's progress should be maintained through use of the Career MAP or another type of Progress Chart. The record should indicate the competencies required for mastery and those competencies the student has mastered.

#### 7. Performance Standards

Instruction should be performance based, with an acceptable performance standard stated for each task. These standards should be shared with students and potential employers.

Students should demonstrate "hands on competency" or "mastery" of a competency before the instructor verifies the student's performance.

8. Safety Standards

Safety instruction must be given prior to shop work and be an integral part of the training program. A safety test must be included in the training program. Eye protection must be worn in any shop/lab area, when required.

9. Personal Characteristics

All training activities and instructional material should emphasize the importance of maintaining high personal characteristics. Employability skills training and evaluation should be integrated throughout the training program.

10. Provisions for Individual Difference

The training program should be structured in such a manner that students with different levels of cognitive and psychomotor skills can be accommodated.

11. Related Instruction

Instruction in related mathematics, communication, and interpersonal relations should be provided and coordinated with ongoing instruction in the training program. This instruction should be provided by a qualified instructor.

12. Testing

Both written and performance-based tests must be used to validate student competency. Students should be encouraged to take certification tests that are publicly recognized indicators of capabilities.

# COURSE OUTLINE/SAMPLE LESSON PLAN

Units of instruction used by Vocational Education teachers must be correlated to the Curriculum Frameworks, and Student Performance Standards. The Curriculum Framework provides the basis for developing the course outline. Each school should utilize the resources and modules that apply to the scope of their program and the various methods of instruction their situation dictates.

Teachers may develop their individual course outlines using the resources and instructional material contained in the last section of this guide. They may also develop their own units of instruction as they feel may be necessary to meet the intended outcomes stipulated in the Curriculum Framework. The number and order of presentation of the modules can be varied to fit the objectives of the course.

For example, a school may elect to go into depth in only a few of the modules, or it may decide to cover a wider range of modules but in less depth. This program can be offered for a single semester or for two or more semesters, depending upon the local situation. A student should not be given credit for enrolling in the same component of instruction more than one time.

# SAMPLE COURSE OUTLINE

Vocational teachers should prepare a comprehensive outline of subjects to study for each course they teach. Each student should be provided a copy of the course outline. Teachers may use any format they desire for the outline, and should include the following information on the course outline.

## Recommended Course Outline Contents

1. Course name.
2. Course number (state directory number and/or local number).
3. Course start date or individual start date.
4. Identification of time periods for study if applicable.
5. Identification of place or room/facility for study or practical work.
6. Identification of teacher/instructor/assistants responsible for instruction and/or evaluation.
7. Identification of units or subjects to study (objectives) or competencies, etc., including Task # or Duty #.
8. Identification of primary resources or references available to study.
9. Identification of major practical exercise work, projects, or activities to perform.
10. Identification of major tests or examinations to be administered.

### SAMPLE COURSE OUTLINE FORMAT

Course Name \_\_\_\_\_

Course Number \_\_\_\_\_

Course Dates \_\_\_\_\_

| Instruction<br>unit or period | Duty or<br>Task #<br>Module | Subject/<br>Objective/ | location | Instructor | Reference |
|-------------------------------|-----------------------------|------------------------|----------|------------|-----------|
|                               |                             |                        |          |            |           |



### Lesson Plans/Teachers Guides & Student Guides

Teachers should prepare lesson plans or teachers guides & student guides for subjects on the course outline. Lesson plans are appropriate for traditional periods of instruction whereas teachers guides may be more appropriate for other types of instructional activities. Student learning guides may be used for traditional periods of instruction but they become a necessity for self-paced learning activities. Teachers guides contain all instructional information as well as tests & answer keys, whereas student learning guides contain only student information.

A sample student learning guide is provided in the following pages. This sample is an example of the material a teacher would provide students with for self-study in a competency-based course activity. Each page of the sample contains a different topic for the sake of illustration only. An actual student learning guide would be written around only one objective.

|                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                              |       |         |      |         |    |   |    |    |       |  |  |  |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------|-------|---------|------|---------|----|---|----|----|-------|--|--|--|
| SCHOOL NAME & LOGO                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                              |       |         |      |         |    |   |    |    |       |  |  |  |
| A                                                                                                                                                                                                                                                    | Business Education                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | A STUDENT LEARNING GUIDE     |       |         |      |         |    |   |    |    |       |  |  |  |
| B                                                                                                                                                                                                                                                    | TASK:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Write Letters Of Application |       |         |      |         |    |   |    |    |       |  |  |  |
| C                                                                                                                                                                                                                                                    | DUTY:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Applying For A Job           |       |         |      |         |    |   |    |    |       |  |  |  |
| D                                                                                                                                                                                                                                                    | PURPOSE:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                              |       |         |      |         |    |   |    |    |       |  |  |  |
| <p>A letter of application is your introduction to a potential employer. The purpose of this letter is to get an interview and a job. A prospective employee who can prepare effective application letters is one step ahead of the competition.</p> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                              |       |         |      |         |    |   |    |    |       |  |  |  |
| E                                                                                                                                                                                                                                                    | <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 15%;">Dept.</td> <td style="width: 15%;">Prog.</td> <td style="width: 15%;">Duty</td> <td style="width: 15%;">Task</td> <td style="width: 40%;">Prereq.</td> </tr> <tr> <td style="text-align: center;">BU</td> <td style="text-align: center;">*</td> <td style="text-align: center;">JA</td> <td style="text-align: center;">02</td> <td style="text-align: center;">JA-01</td> </tr> </table> | Dept.                        | Prog. | Duty    | Task | Prereq. | BU | * | JA | 02 | JA-01 |  |  |  |
| Dept.                                                                                                                                                                                                                                                | Prog.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Duty                         | Task  | Prereq. |      |         |    |   |    |    |       |  |  |  |
| BU                                                                                                                                                                                                                                                   | *                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | JA                           | 02    | JA-01   |      |         |    |   |    |    |       |  |  |  |

Each learning guide has a cover page like the sample above that contains the following items:

- A. the name of the program
- B. the task—a statement of exactly what you will be able to do or know when you complete the learning guide.
- C. the duty—the broad unit in which this task is found.
- D. the purpose—a statement of why it is important to attain the task.
- E. identifying information such as department, program, duty, task, and prerequisite. The prerequisite in the box on the far right tells you that you must have already attained the task identified there before proceeding to attain the one in the present learning guide.

|                                                                                                                                                                                                                                                  |                                                                                                                                                              |       |       |      |      |    |      |   |    |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|-------|------|------|----|------|---|----|
| STUDENT PERFORMANCE OBJECTIVES:                                                                                                                                                                                                                  |                                                                                                                                                              |       |       |      |      |    |      |   |    |
| A                                                                                                                                                                                                                                                | TERMINAL PERFORMANCE OBJECTIVE:                                                                                                                              |       |       |      |      |    |      |   |    |
| B                                                                                                                                                                                                                                                | GIVEN: plans and a residential site.                                                                                                                         |       |       |      |      |    |      |   |    |
| C                                                                                                                                                                                                                                                | YOU WILL: construct and set forms for a continuous footing.                                                                                                  |       |       |      |      |    |      |   |    |
| D                                                                                                                                                                                                                                                | HOW WELL: You must successfully complete the Written Test and score 100% on the Performance Test.                                                            |       |       |      |      |    |      |   |    |
| ENABLING OBJECTIVES:                                                                                                                                                                                                                             |                                                                                                                                                              |       |       |      |      |    |      |   |    |
| <ol style="list-style-type: none"> <li>1. Identify styles, uses and parts of forms.</li> <li>2. Prepare for constructing continuous footings.</li> <li>3. At a school work station, construct and set forms for a continuous footing.</li> </ol> |                                                                                                                                                              |       |       |      |      |    |      |   |    |
| E                                                                                                                                                                                                                                                | <table border="1"> <tr> <td>Dept.</td> <td>Prog.</td> <td>Duty</td> <td>Task</td> </tr> <tr> <td>IN</td> <td>9163</td> <td>F</td> <td>01</td> </tr> </table> | Dept. | Prog. | Duty | Task | IN | 9163 | F | 01 |
| Dept.                                                                                                                                                                                                                                            | Prog.                                                                                                                                                        | Duty  | Task  |      |      |    |      |   |    |
| IN                                                                                                                                                                                                                                               | 9163                                                                                                                                                         | F     | 01    |      |      |    |      |   |    |

The student performance objective page, similar to the sample you see above, contains the following information:

- the terminal performance objective (TPO)-the broad heading that encompasses the three items beneath it and states in detail what will be expected of you at the end of the learning guide
- the given-a statement of what will be provided when you take the written or performance test
- the you will-a statement of what will be required to attain the task
- the how well-a statement of the degree of performance excellency required to attain the task
- the enabling objectives (EO's)-the steps to be taken in attaining the task

|   |                                                             |       |      |                                                                           |         |
|---|-------------------------------------------------------------|-------|------|---------------------------------------------------------------------------|---------|
| A | ENABLING OBJECTIVE NO. <u>2</u>                             |       |      |                                                                           |         |
| B | Disassemble fuel injector and inspect parts.                |       |      |                                                                           |         |
| C | LEARNING STEPS                                              |       |      | RESOURCES                                                                 |         |
|   | 1. Disassemble injector.                                    |       |      | 1. a. Needle valve injector<br>b. Mechanic' tool set<br>c. Injector tools |         |
|   | 2. When completed, evaluate your work using the Self-check. |       |      | 2. Self-Check enclosed                                                    |         |
|   | 3. Have instructor evaluate your recordings.                |       |      | 3. Instructor                                                             |         |
|   | 4. Go on to Enabling Objective No.3.                        |       |      |                                                                           |         |
| E | Dept.                                                       | Prog. | Duty | Task                                                                      | EN.OBJ. |
|   | IN                                                          | 9123  | C    | 05                                                                        | 2       |

The enabling objectives are the heart of the learning guide. They provide detailed steps of what to do and when to do it.

There is an enabling objective page for each EO listed on the student performance objective page. The EO page resembles the sample above, and contains the following information:

- the number of the EO being learned
- a restatement of the EO as it appeared in the student performance objective
- the learning steps—they tell you what to do
- the resources—they tell you what items you will need to complete the steps

INSTRUCTION SHEET

Mounting Tires

Follow the procedure below for mounting a tire on a rim. Pay close attention to all safety precautions.

CAUTION: WEAR SAFETY GLASSES AT ALL TIMES!

1. Visually inspect tire for any wear or damage.
2. Place the rim on the changer with the narrowest flange up — hand tighten centering cone.
3. Lubricate bead of tire with soap solution.
4. Place tire in position on the rim with as much bead over the rim flange as possible. This provides a starting position for bead lifting tool.
5. Attach the air hose for inflating the tire.

CAUTION: KEEP THE HANDS AND BODY AWAY FROM TIRE WHILE INFLATING.  
IF THE TIRE SHOULD EXPLODE YOU COULD BE INJURED!

| Dept. | Prog. | Duty | Task | En Obj |
|-------|-------|------|------|--------|
| IN    | 9043  | B    | 02   | 2      |

The procedure in using the EO page is to follow each learning step in sequence. The first several learning steps will tell you to read or view particular resources identified to the right of the step (see #2 on the sample EO page). Other learning steps will ask you to practice or apply the knowledge or skill (see #3 on the sample). Another learning step will identify the type of feedback used in evaluating the skill or knowledge called for in the EO. Often this is a self-check (see #4 on the sample). Some learning guides will have instruction sheets on the order of the above sample.

SELF-CHECK

DIRECTIONS

Evaluate your work using the items listed below. All items should receive a "yes" response.

- |                                                                      | YES   | NO    |
|----------------------------------------------------------------------|-------|-------|
| 1. Was the stocked area layed out with a pencil and chalk line?..... | _____ | _____ |
| 2. Did each end of the stock area begin with a stack of blocks?..... | _____ | _____ |
| 3. Was the line hung on the left lead first?...                      | _____ | _____ |
| 4. Was the line hung in 45 seconds?.....                             | _____ | _____ |

If you received a "no" response for any item, go back and repeat one or more of the Learning Steps for this Enabling Objective.

| Dept. | Prog. | Duty | Task | En Obj. |
|-------|-------|------|------|---------|
| IN    | 9133  | B    | 18   | 2       |

The self-check gives you immediate feedback on how well your learning is progressing.



WRITTEN TEST FOR TASK NO. \_\_\_\_

TASK: Demonstrate and use Ohm's Law

### Directions

The purpose of this test is to determine if you fully understand how to demonstrate and use Ohm's Law. To successfully complete this test, all items must be answered correctly.

The items below are Multiple Choice. On the separate answer sheet, put the letter of the correct answer in the blank to the left of the number of the question.

### Multiple Choice Question

- \_\_\_\_ 1. According to accepted theory, electric current is:
  - a. the electron at rest.
  - b. the flow of electrons.
  - c. the movement of atoms.
  - d. the movement of protons.
- \_\_\_\_ 2. The ohm is the unit of electrical:
  - a. current.
  - b. voltage.
  - c. pressure.
  - d. resistance.

| Dept. | Prog. | Duty | Task |
|-------|-------|------|------|
| IN    | 9273  | B    | 02   |

| <b>PERFORMANCE TEST FOR TASK NO.</b> _____                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                    |      |                   |         |       |      |      |         |    |      |   |    |  |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------|------|-------------------|---------|-------|------|------|---------|----|------|---|----|--|
| <hr/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                    |      |                   |         |       |      |      |         |    |      |   |    |  |
| <b>TASK:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Perform Cash Transactions                                          |      |                   |         |       |      |      |         |    |      |   |    |  |
| <hr/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                    |      |                   |         |       |      |      |         |    |      |   |    |  |
| <b>STUDENT'S NAME</b> _____                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                    |      | <b>DATE</b> _____ |         |       |      |      |         |    |      |   |    |  |
| <p><b>DIRECTIONS TO STUDENT:</b> In a store situation, you will set up a till and place the currency in the proper place. You will be evaluated for attainment of this task, based upon the items listed below.</p>                                                                                                                                                                                                                                                  |                                                                    |      |                   |         |       |      |      |         |    |      |   |    |  |
| <hr/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                    |      |                   |         |       |      |      |         |    |      |   |    |  |
| ITEM<br>NO.                                                                                                                                                                                                                                                                                                                                                                                                                                                          | ITEMS TO BE EVALUATED:                                             | YES  | NO                |         |       |      |      |         |    |      |   |    |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | For successful attainment ALL items must receive a "YES" Response. |      |                   |         |       |      |      |         |    |      |   |    |  |
| 1.                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Were all bills placed in the proper slot?.....                     | .... | ....              |         |       |      |      |         |    |      |   |    |  |
| 2.                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Were all coins placed in the proper compartment?..                 | .... | ....              |         |       |      |      |         |    |      |   |    |  |
| 3.                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Was the work area cleaned?.....                                    | .... | ....              |         |       |      |      |         |    |      |   |    |  |
| _____ Score                  _____ Attained<br>_____ Not Attained                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                    |      |                   |         |       |      |      |         |    |      |   |    |  |
| <table border="1" style="margin: auto; border-collapse: collapse;"> <tr> <td style="padding: 2px;">Dept.</td> <td style="padding: 2px;">Prog.</td> <td style="padding: 2px;">Duty</td> <td style="padding: 2px;">Task</td> <td style="padding: 2px;">Attempt</td> </tr> <tr> <td style="padding: 2px;">DE</td> <td style="padding: 2px;">4623</td> <td style="padding: 2px;">C</td> <td style="padding: 2px;">03</td> <td style="padding: 2px;"></td> </tr> </table> |                                                                    |      |                   | Dept.   | Prog. | Duty | Task | Attempt | DE | 4623 | C | 03 |  |
| Dept.                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Prog.                                                              | Duty | Task              | Attempt |       |      |      |         |    |      |   |    |  |
| DE                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 4623                                                               | C    | 03                |         |       |      |      |         |    |      |   |    |  |
| <hr/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                    |      |                   |         |       |      |      |         |    |      |   |    |  |
| <b>EVALUATOR'S SIGNATURE</b>                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                    |      |                   |         |       |      |      |         |    |      |   |    |  |

The performance test is always the last page of the learning guide.

It may identify checkpoints of evaluation in the performance of skill, or it may list desirable characteristics of the finished product.

**\*\*Example of Student Learning Guides taken from : Learning at Ridge Vocational Technical Centers, State of Florida, Department of Education, Division of Vocational Education; June, 1980.**

# STUDENT ORGANIZATION PARTICIPATION

Vocational student organizations operate pursuant to federal and state laws, which authorize them as viable components of vocational education programs. According to federal regulations, the vocational education program of instruction may include activities of vocational student organizations which are an integral part of the vocational instruction offered and which are supervised by vocational education personnel. The Florida Board of Education Rules authorize vocational student organizations as an integral part of the vocational education program SBER 6A-6.64 (7) and 6A06.65 (8).

Vocational Student Organizations are operated throughout the Nation on the basis of legal endorsement, financial support, and active participation of federal, state and local levels of government as well as the civic and business communities.

Vocational Student Organization Activities are an integral part of the vocational curriculum in Florida. The organizations are designed to expand and enrich opportunities for leadership development, social awareness, civic responsibility, and vocational understanding.

Students who participate in the activities of a vocational student organization are better prepared to take their places in the world of work. They acquire firsthand knowledge of the many opportunities available in their chosen careers, and become aware of the value of their contributions

to society.

Vocational student organizations provide opportunities for members to participate in activities which relate to actual or anticipated employment. Students develop and utilize their talents and abilities in ways that otherwise could not be available to them.

#### Vocational Industrial Clubs of America (VICA)

The Vocational Industrial Clubs of America (VICA) is an organization for students enrolled in trade, industrial, technical, and health occupations in high schools, area vocational-technical centers, and junior and community colleges.

VICA promotes high standards in work ethics, craftsmanship, scholarship, and safety while it fosters a deep respect for the dignity of work. In addition, the precepts of VICA help students relate school experiences to their search for meaning, identity, and achievement. A great deal of emphasis is placed on the functions of labor and management organizations, their interdependence, and their importance.

VICA members learn and develop skills in many different trades, including building, automotive, mechanical, heavy equipment, and electrical. In addition, students in such personal service occupations as cosmetology may be a part of VICA.

Prestige and recognition are offered to the VICA member through a local, regional, state, national, and international program of competition and

awards. Opportunities to develop personal leadership skills are provided through workshops and seminars while competitive activities help to develop the students' perspectives.

Membership in VICA helps students learn to work together and prepare for life through a continuing emphasis on the importance of each person's role as a contributing member of American society.

What is VICA?

VICA is an organization for students enrolled in fulltime secondary or post-secondary trade, industrial, or technical occupations education programs. It is the only national (and international) organization for trade and industrial students.

VICA gives every member a chance to learn, to enjoy the interaction with other students, to assist their schools and communities, and to grow and mature in qualities necessary to meet the challenges of the life ahead of them. VICA members are no different from other students except that they have found a way to make their formal training and education an enjoyable and rewarding experience. They're "turned on" to the satisfaction, rewards, and fun they have found in VICA.

VICA is the students' organization; the goals, purposes, and activities that relate to their own personal career goals and life interests. VICA is for students with a definite future in mind—people who can think with their minds and work with their hands, people who are proud of their work they do and want to learn to do it better. VICA is for those who want to develop as

members of society, to learn to express themselves, to work with others, and to make contributions as individuals.

VICA is YOUR organization.

VICA is much more than contests.

VICA is training youth for leadership roles  
within their schools and communities.

VICA is instilling in youth the importance of participation,  
within their school, within their community and within the  
student organization.

VICA is also participation in leadership and skill areas.

A good VICA program gives Industrial Education programs  
high visibility.

Contests at the local-club level determine which students shall represent their school in regional competitions. Instructors should plan and conduct contests within their trade areas. This philosophy shall also prevail for leadership areas of emphasis. (Successful competitors at local school levels may, in school districts so desiring, compete within the district. THIS IS A SCHOOL DISTRICT OPTION.)

Successful competitors at the local school level compete at one of Florida's five regional contests. Successful competitors next compete at the state level. The state winners compete on the national level, in the United States Skill Olympics.

Competitors for the International Skill Olympics (ISO) are determined by a



combination of leadership and skill abilities. The International Skill Olympics Committee establishes all rules and guidelines for the ISO.

The following additional criteria will be used in the selection of International contestants:

- a. Overall citizenship—as demonstrated by attitude toward school, occupation, VICA, additional training, etc.
- b. Evaluation of progress in skills and knowledge of trade, metric applications, print reading, and layout of problem.
- c. Personal desire to represent VICA and the United States in international competition.
- d. Willingness to make a commitment to VICA as to purpose of organization, code of conduct, preparation time, etc.
- e. Contestant's self-reliance, basic intelligence, ability to follow instruction, maintain schedules, and adapt to last-minute changes.

#### Local VICA Organization

##### 1. School Club

Each school is one club (with one charter). A "school" shall be defined as one that appears with an assigned number in the current Florida Directory.

##### 2. Chapters

In the event that a school has a multiple sessions, each session shall be identified as a "chapter" (example— morning session identified as chapter #1, afternoon session chapter #2, evening

session chapter #3, etc.).

### 3. Section

Each occupational program within each chapter shall be identified as a "section" (example- auto mechanics, welding, cosmetology, etc.).

## Organizational Structure

Conducting a local club activity is the responsibility of every member. Every member must have a function to perform. A balanced organizational structure is necessary to equalize the workload as well as to pinpoint responsibility. When the students know what is expected of them, they can better use their abilities to plan and execute their own activities and , at the same time, grow in leadership ability. An effective organizational structure allows for the mixing of people and personalities, which is good human relations training.

It is a good idea to make a poster-size (or larger) organizational chart, to display it on the bulletin board, and to duplicate smaller copies of the chart so each member may have a copy. Members are less likely to shirk their responsibilities when all members are aware of everyone's assigned duties. Advisors must be careful to enforce the chain of command in all decisionmaking situations.

The national organizational structure shows the relationships of the local, state, and national organizations. It is important that every member understand just how the total organization functions. See VICA

Organizational Diagrams at Appendix B.

### Intergrating VICA and Instruction

What is meant by the phrase "Integrating VICA and Instruction?" Some teachers feel that integrating VICA activities in between their instructional activities (in printing class, slotting VICA between a unit on the offset press and a unit on stripping) is best. Then there is always the teacher who says, "Look, nothing really happens Friday afternoons anyway, so I will slot VICA activities in on Friday afternoon. We will have our 5-minute VICA club meeting and that will satisfy the talk about integration of VICA activities into the instructional program."

This is not what we are talking about. We are talking about VICA being an integral part of everything that happens inside the classroom.

You may wish to secure and study the slide-tape program "Integrating VICA and Instruction" that is available from your Regional Program Consultant or Regional Program Advisor. You also may wish to purchase the set.

In-school instruction involves the organized presentation and application of knowledge, skills, and attitudes. Laboratory occupational experiences require the individual student to apply, in a simulated work setting, the knowledge, skills, and attitudes acquired through in-school instruction. VICA activities are part of in-school instruction and laboratory occupational experiences. Integrated club activities improve and tie together the existing curriculum.

VICA is specifically for Vocational Instruction Education. The activities of a chapter can be part of the learning experiences planned for any vocational class. Vocational education classes such as welding, foods, drafting, and auto mechanics can utilize VICA as a teaching tool. Any student who is enrolled in Vocational Industrial Education and meets membership requirements can be a member of a VICA club.

Job skills and procedures are often well defined and structured in the vocational programs. For example: in individual vocational courses, such skills as drawing to scale in drafting, tuning a motor in automobile mechanics, and keeping production records in a vocational printing course are taught. Although such skills are often taught at all levels in vocational education, the attitudes and values that promote employability and employment stability often are neglected parts of structured skill-oriented vocational programs. For example: learning experiences dealing with such activities as getting along with coworkers, accepting constructive criticism, or taking orders might not be as easily dealt with or integrated into skill-oriented, vocational courses. (See chart below.)

---

**CLUB ACTIVITIES PROVIDE EXPERIENCE  
THAT LEAD TO EMPLOYABLE  
SKILLS AND ATTITUDES**

1. Getting along with co-workers.
2. Respecting authority.

3. Accepting criticism.
  4. Respecting the rights dignity of others.
  5. Meeting deadlines.
  6. Working with supervisors.
  7. Taking directions.
  8. Communicating clearly.
  9. Taking initiative.
  10. Being punctual.
  11. Assuming responsibility.
  12. \_\_\_\_\_
  13. \_\_\_\_\_
  14. \_\_\_\_\_
- 

### Being an Effective Advisor

The effective advisor believes in student-directed learning, is organized, and is flexible in planning. The effective advisor works to become a respected person in the community, thereby building support for VICA activities. The effective advisor blends the classroom world with the "working" world and associations, and involves students with business, professional, and community leaders. The effective advisor promotes enthusiasm. For these efforts, the effective advisor receives a lifetime of psychological rewards.

The following club/classroom activities from the teacher/advisor viewpoint,

should make being an advisor easier.

- 
1. Advise and guide; do not dictate.
  2. Positively assume that club activities are going to succeed.  
Know that club activities are strong teaching tools. Show enthusiasm.
  3. Establish basic ground rules that help students to lead themselves. Hold meetings regularly and conduct meetings in a business-like manner.
  4. Organize activities. Set up club files and a library of club-related materials.
  5. Remember that club activities are individual and group activities and are NOT teacher activities.
  6. Use students as class leaders.
  7. Develop professional slide presentations about club work in classes.
  8. Develop an informational packet to use with the community and other school personnel. Include such things as curriculum outlines, training plans, national headquarter promotions, calendars of work, etc.
- 

#### Necessary Groundwork—Selling the VICA CLUB

Selling club activities to the department chairman, school administrators, and the community is an important first step in the organization of a club.



You may be told that there can be no clubs in the classroom and that few students join any more. Keep in mind that the VICA organization is not a club in the traditional sense. With ingenuity, a club can work in any situation in spite of rigid rules. Stress that VICA is INTEGRAL TO THE TOTAL PROGRAM AND SHOULD BE CONSIDERED A VERY IMPORTANT TEACHING TOOL IN AND OUT OF THE CLASSROOM/SHOP. Some suggestions on how to sell club-work are included below.

1. Discuss ideas. Don't spring the idea of an integrated club on people whose support will be needed.
2. Inform people about the state and national organizations by handing out and discussing promotional materials.
3. Make starting a VICA organization part of the agenda of the Craft Advisory Committee's meeting. Present your proposals to this group. Let the committee work with students to plan a program of activities.
4. Survey students on their interests in club activities. Compile and distribute results.
5. Check course outlines to see how club activities can fit in. Add these activities to lesson plans.
6. Relate the school philosophy to the national VICA Organization's goals, purposes, and program of activities.
7. Project the number of resource persons that students would contact in the community who would be up-to-date experts in certain areas.
8. Identify the club as an important public relations tool.
9. Show how club activities are important motivational projects

that promote student-directed learning.

10. If necessary, point out the benefits of club activities in relation to the relatively low cost-per-student.
11. Confer regularly with those in charge, i.e., department chairpersons, officers, and school administrators.

## STUDENT ADMISSIONS CRITERIA

## INTRODUCTION

Leading the individual student to successful completion of a vocational education program—in either a secondary or a post-secondary institution—should be the only major concern of a school's teaching effort. It is, therefore, of the utmost importance to direct thought, planning, and effort into identifying and selecting students with excellent potential for success in the educational program and in the industry. The school's primary task is to prepare people for full-time, entry-level positions as technicians or, in the case of those with more experience, as managers. Recruiting efforts will, of course, vary from school to school depending upon level (secondary or post-secondary), courses available, and local needs.

Students enrolled in an occupational cluster should be able to benefit from the instructional content therein with reasonable expectations for employment upon successful program completion.

In accordance with the Course Code Directory, an occupational program is offered to students at grade levels specified therein. The specific student admissions criteria required by the state and local education agencies are identified below.

SPECIFIC ADMISSIONS CRITERIA

|                                        | SECONDARY                                  | POST-SECONDARY                             |
|----------------------------------------|--------------------------------------------|--------------------------------------------|
| Minimum age:                           | n/a                                        | n/a                                        |
| High School Diploma or GED Required:   | no                                         | yes                                        |
| Physical Requirements:                 | Ability to<br>distinguish<br>color recomm. | Ability to<br>distinguish<br>color recomm. |
| Special Requirements:                  | none                                       | none                                       |
| * Minimum Basic Skills Math Level:     | n/a                                        | 7.0                                        |
| * Minimum Basic Skills Language Level: | n/a                                        | 7.0                                        |

\*This grade level number is specified in the Curriculum Framework and is derived from a state basic skills examination.

In addition, attention should be focused on other personal qualities that, in theory, may be subject to improvement within a training program but, in reality, may prove to be serious impediments to success. Typical would be deficiencies in communications and mathematical skills. Such skills should be measured by tests and the results used as a screening guide or as a basis for providing additional program requirements.

THE STUDENT PROFILE

It is difficult to find an "ideal" student. Many will apply for a place in various training programs. The question is: How can students with the most potential for success be selected?

To attempt to draw a profile of the ideal student candidate would be fruitless because the ideal candidate cannot be defined in a manner that would fit all localities, nor even in such a way as to fit all situations in a single locality. Nevertheless, it is appropriate for the Craft Advisory Committee and the school system to develop a profile as a basic guide, with the certain knowledge that supplying candidates at any given time will necessarily entail compromise.

Rejecting high school students requesting admission to a vocational program would probably not be permitted in any school system in the nation. Even if students could be screened, it would be difficult to determine which would be successful. In a high school program, it may be best to accept as many students as possible and let their abilities surface in the first year or two. It may then be possible to place the strongest students in a vocational "capstone" course in their senior year, either for employment upon graduation or as a necessary prelude to admission to a post-secondary program. Obviously, this is not a perfect solution; but in the real world, perfection is rare.

The community college should make a greater effort to enroll the "ideal" student. This may be done through a process of screening "all comers" or by consciously recruiting potential students with known qualifications. In either case, the school and the Craft Advisory Committee will need to draw a profile of the desirable student. The profile will contain a list of qualities, traits, and aptitudes that combine to make a potentially successful candidate. Since few of these qualities are completely missing

in any one person, acceptable levels must also be determined. The qualities deserving of highest attention—mechanical aptitude, for example, or native intelligence—are those which the educational program itself is unlikely to be able to change. Accordingly, such matters should carry considerable weight in establishing the basic profile. Other matters—deficiencies in mathematical or communications skills, for example—may lend themselves to improvement through related instruction, even though they are not parts of the training program per se. Following is a list of specific qualities the Advisory Committee and school staff should consider when establishing the student profile:

MECHANIC/TECHNICIAN—SERVICE

- Knowledge of basic tools and equipment used by mechanics/technicians
- Aptitude needed to think through and solve mechanical and technical problems;
- Ability to understand written mechanical/technical materials;
- Ability to interpret mechanical/technical drawings;
- Mechanical dexterity.

MECHANIC/TECHNICAL SERVICE MANAGEMENT

- Basic knowledge of service;
- Business skills;
- Ability to work with people;

A first aid station must be in place, well marked, and complete with appropriate supplies.

11. Facility Evaluation

The advisory committee should be asked to conduct an annual evaluation of the facilities to assure adequacy to meet program needs.



- Communications skills;
- Leadership.

#### QUALIFYING AND PRETESTING

The process of qualifying a potential student for training must be an integral part of the recruiting process. Considerable amounts of time and money will be spent on students entering training. There must be some assurance that they are receptive to, and capable of benefitting from, the training that will be provided.

In the normal process of recruitment, recruiters will have some idea of the candidate's basic traits and capabilities. Whoever guides the candidate to the program will also have some knowledge of the person's interests, abilities, and experience. These perceptions should be considered by school admissions officials.

Care must be taken, however, to assure that highly favorable early-interview impressions—or negative impressions, for that matter—do not prejudice the final decision. Determination of the candidate's potential for success can be greatly aided by pre-school testing. Such tests can yield reliable clues to certain characteristics, such as mechanical aptitude, that are essential. The tests can also tell a great deal about the candidate's present knowledge and skills. These, in turn, can help determine how much and what kind of training each individual should receive.

Despite the efficacy of many tests, a caveat should be noted. Standardized

testing has come under fire, in recent years, from many quarters. It has frequently been charged, for example, that some standardized tests are culturally biased and, consequently, favor one group in society over another. Those charged with responsibility for admissions should be aware that testing, while it can often provide valuable insights, should never be the sole criterion for admissions.

#### COUNSELING AND GUIDANCE

Counseling is a two-fold activity. Its first use is to guide the qualified, prospective student into the program; its second is to help the enrolled student on a continuing basis throughout the program.

Entry into a program does not cause all student problems to vanish; each student will encounter new problems as the program unfolds. The counselor's job is to work with the student to help identify problems and then work toward their solution. The counselor must also constantly watch for signs of discouragement or loss of interest and attempt to determine their causes.

Much day-to-day counseling will necessarily fall to the teacher. The teacher has the most contact with the student and is often in a position to detect and correct a problem while it is small. Overlap of responsibility between teacher and counselor should be apparent. The importance of working together in this critical area cannot be overstated.

The professional counselor cannot be expected to have the expertise of the teacher. The teacher will therefore provide much of the counseling that

focuses on trade knowledge and skills. The counselor, on the other hand, will focus on the student's needs for advice on related instruction and in connection with personal growth, interests, and attitudes. In large programs, at least one counselor with deeper knowledge of the industry should be available.

#### STUDENT PLACEMENT

Placement will not be a factor with some students, such as those currently employed in the industry. A student from industry, even if in school by personal choice, is likely to have a good idea of where to go when the program is completed. The school placement program should, of course, be as available to these students as to anyone else.

The placement program, for the most part, will serve students who enter with little or no experience in, or contact with, the industry. Many such students will develop industry contacts during the course of instruction, particularly if a cooperative program is offered.

It is logical to center placement activity at the school. The school has an organized placement office for other occupations.

The tasks of the placement official is to fit graduating students to job openings in the community. Identifying graduating students is a simple task, but the placement official will also need to know something of each student's personal aims and interests in addition to what is on the achievement record. The placement official should develop a form that will

provide this information in simple format for easy reference. The placement official, the counselor, and the teacher should assist students in the preparation of effective resumes.

Input concerning employment openings is somewhat more difficult to organize. Such input must come from individual service establishments in the community. Each job listing should include as much detail as possible about the work involved. A standard form for this purpose will facilitate matching an applicant to a job.

The placement official should attempt to expose a given student to as many suitable job openings as possible. Conversely, employers should be exposed to as many qualified candidates as possible. The placement official should take special pains to avoid matching up an applicant and a job that are obviously not suited to each other.

The final fit of placing technicians in an appropriate job is the joint responsibility of the student and the employer. The success of this final decision will be greatly enhanced when both student and employer have numerous interview opportunities and as wide an area of choice as possible.

The role of the Craft Advisory committee in placement is two-fold:

- To work closely with the school in establishing an adequate placement function and to evaluate its performance on a continuing basis;

—To work closely with all industry establishments in the community to encourage them to use the school's placement office; to provide adequate job information to the placement office; and to develop an effective procedure for interviewing and evaluating potential employees suggested by the school.

If the need for competent technicians is as great as claimed, and if the educational program performs in such a way as to produce qualified technicians, the failure of local service establishments to follow through with job listings and effective interviewing and hiring practices can seriously impair the ultimate success of the program. It is up to the Advisory Committee to make certain that student placement proceeds in a smooth and effective manner.

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## TEACHER CERTIFICATION AND QUALIFICATIONS

### QUALIFICATIONS

The Teacher is qualified to teach by one of the following methods:

1. Regular or temporary Florida teacher's certificate with appropriate coverage;
2. Approval of local school board consistent with adopted school policy; or
3. Regular or temporary Florida teacher's certificate with other than appropriate coverage; has met all occupational experience requirements prescribed as a prerequisite to appropriate certification, and has been approved by the school board to teach out-of-field.

Refer to the Curriculum Framework for this program to determine the certification coverage for this program.

### INSTRUCTIONAL STAFF

It is recommended that the instructional staff have technical competency and meet all state and local requirements for certification.

#### 1. Technical Competency

Instructor(s) should have demonstrated technical competency and should hold current, nationally recognized certification in the laboratory areas taught. Instructors should hold current, nationally recognized certification, if awarded.



2. Instructional Certification

Instructors should meet all state certifying requirements.

3. Technical Updating

Faculty members should be provided technical materials required to maintain their competency. An opportunity should be provided for instructor(s) to return to industry on a regular basis for in-service and skill upgrading.

4. One or more instructor(s) in each department should hold a current American National Red Cross Standard First Aid Certificate.

5. Substitutes

A systematic method of obtaining "substitute" or "supply" instructors should be used to assure instructional continuity. An orientation session for substitutes should be held on a regular basis. The substitute should be a competent instructor in the occupational area and specific competencies taught.

## FACILITY DESIGN CRITERIA

### INTRODUCTION

Even the best instructor should not be expected to turn out competent and immediately productive graduates if they are forced to learn with out-of-date, improper, or inadequate facilities, tools, and equipment. Planning for and providing the proper facilities, tools, and equipment are difficult parts of establishing a training program, especially when space and budgetary constraints are considered. Facilities, tools, and equipment should be adequate to meet teaching objectives.

This section of the Program Guide contains guidance for setting up classroom activities as well as lab or shop facilities. Diagrams of typical classroom and shop layouts are contained in Appendix A.

### REAL-LIFE FACILITIES

The training facility cannot duplicate the real-life facility in which the student will work after graduation. However, the more the school resembles the industrial environment, the easier it will be for the student to make the transition from school to work. Tools, supplies, and test equipment should conform to local industry usage. Although different facilities may utilize different makes of tools and equipment, the actual differences in operation of most equipment are usually not so great. The on-the-job training each graduate will inevitably receive will usually reconcile

differences between equipment used in the school and that in the commercial shop.

#### TEACHING FACILITIES

Additional facilities and equipment will be required that are peculiar to the teaching job itself. Among the more important are:

Classroom space;

Audio-Visual Equipment—motion picture, slide, filmstrip, and overhead projectors; videotape units; microfiche readers;

Special devices to demonstrate basic principles and theory;

Duplication of tools and appropriate equipment to enable several students to work individually on the same service operation;

"Live Work" area(s) or laboratory facilities.

A superior instructor could no doubt make do without much of this equipment. But the availability of state-of-the-art training devices enhances the effectiveness and efficiency of any classroom.

Efficiency means achieving instructional objectives in the shortest time possible. By reducing training time and lost motion, the "return on investment" of the facility increases, competent maintenance persons enter

the industry more quickly, and the individual student initiates a career and begins producing personal income sooner.

#### UPDATING FACILITIES

Facilities and equipment need updating just as curriculum, course content, and instructor capability do—and for the same reasons: technological change and improvements from year to year. Updating facilities and equipment may be more costly than updating course content—but failure to do so, at least minimally, will almost certainly impair the effectiveness of the program in a relatively short time.

#### DETAILED FACILITIES ANALYSIS

The advisory committee can assist the school in establishing priorities for installing facilities, tools, and equipment. Some are necessary; others are advantageous; and some can be considered nice to have, but essentially unnecessary. Careful planning and analysis of needs over several years can, however, lead to the establishment of a first-rate facility in almost any community.

#### FACILITIES ORGANIZATION

In planning adequate facilities, one of the more critical considerations—and one that is far too often underestimated—is providing adequate space to meet the changing needs of the instructional program. Buildings should be

designed and constructed for future expansion.

#### WORK STATION ARRANGEMENT

The arrangement of work stations and specialized equipment depends upon the general shape of the facilities, the number of specialized areas depends, to some extent upon the preferences of staff. However, a few fundamentals should be kept in mind:

Convenient location of entrances and exits;

Easy access to and among service benches;

#### TRAFFIC FLOW

The overall layout of the service facility should be planned so that the location of entrances and exists permits a logical flow of work in progress. The arrangement of benches to obtain an efficient traffic pattern is one of the most critical factors in planning a facility.

#### PERSONAL TOOL/EQUIPMENT STORAGE AREA

A student tool storage room or area should be provided, with adequate shelf space for tool boxes and floor space for equipment. This area should afford maximum security for student tools.

# ADDITIONAL FACILITY CONSIDERATIONS

## 1. Training Stations

Training stations and live work areas must be available in the type and number required for the performance of the tasks outlined in the program goals and performance objectives.

## 2. Safety

The facilities must meet all applicable safety standards.

## 3. Maintenance

A regular facilities maintenance program should be used to assure facilities are suitable when required for instruction.

## 4. Housekeeping

The classroom, laboratory, and support area(s) should be kept clean and orderly.

## 5. Office Space



An area separate from the classroom and laboratory should be available and convenient for use by the instructor(s) as an office.

#### 6. Instructional Area

A classroom convenient to, but separate from, the laboratory area should be available for instruction and other non-shop activities.

#### 7. Storage

Storage areas for tools, parts, supplies, and machines must be sufficient to support the activities outlined in the program goals and performance objectives. Security should be provided to prevent pilferage and vandalism.

#### 8. Support Facilities

Restrooms, clean up areas, and lockers should be provided convenient to the instructional area.

#### 9. Ventilation

If required, an adequate fume removal system should be in place and operable. When appropriate, heating and cooling systems should be used to provide sufficient comfort for learning.

#### 10. First Aid

SUGGESTED EQUIPMENT LIST

AUTO BODY REPAIR AND REFINISHING

| QUANTITY | ITEM DESCRIPTION                                 |
|----------|--------------------------------------------------|
| 1        | Grinder, Pedestal, 1 in. x 8 in.                 |
| 1        | Drillpress, 15 in.                               |
| 1        | Metal Saw, Saber                                 |
| 1        | Battery Charger                                  |
| 1        | Dozer, Body                                      |
| 1        | Booth, Spray Paint                               |
| 1        | Steam Cleaner                                    |
| 1        | Jack, Hyd. Body 4 ton                            |
| 1        | Jack, Hyd. Body 10 ton                           |
| 2        | Jack, Floor 2 ton                                |
| 1        | Bench, Maple, 30 in. x 60 in.                    |
| 3        | Bench, Steel, 30 in. x 60 in.                    |
| 3        | Regulator, Oil & Water                           |
| 1        | Can Set                                          |
| 1        | Welder, Arc, 250 amp AC/DC                       |
| 1        | Welding and Cutting Outfit w/cylinder regulators |
| 2        | Helmets, Arc welding                             |
| 1        | Goggles, acetylene welding                       |
| 1        | Hammer, chipping                                 |
| 1        | Hand truck for gas cylinders                     |
| 2        | Sander, Orbital                                  |
| 2        | "C" Clamp Set                                    |
| 1        | Electric Drill Set                               |

|   |                            |
|---|----------------------------|
| 1 | Sander, Disc. Set          |
| 2 | Polisher, Portable         |
| 2 | Sander, Orbital (heavy)    |
| 1 | Adjustable Wrench Set      |
| 1 | Hammer Set, compothane     |
| 1 | Tool Board, Hammer Set     |
| 1 | Screwdriver Set            |
| 1 | Screwdriver Set (offset)   |
| 1 | Punch & Chisel Set         |
| 1 | File Set                   |
| 1 | Metric Socket & Tool Set   |
| 2 | Drill Bit Set              |
| 2 | Allen Wrench Set (Bracket) |
| 2 | Allen Wrench Set           |
| 1 | Puller Set                 |
| 1 | Puller, Rear Axle          |
| 2 | Hacksaw, frame only        |
| 1 | Screw Extractor Set        |
| 3 | Vise, Machinists 5"        |
| 1 | Grinding Wheel Dresser     |
| 1 | Pliers Set                 |
| 3 | Electrical Accessories Set |
| 1 | Riveter, Pop               |
| 6 | Hose, Air                  |
| 2 | Sander, Portable 5"        |
| 3 | Gun, Paint                 |

- 1       Pneumatic Hammer Set
- 1       Wrench, Air Impact
- 1       Impact Socket Set, 1/2" Square Drive
- 1       Electronic Shop Tool Set
- 1       Jack, Utility, 5 ton
- 5       Jack Stand Set
- 2       Box, Tool, Large
- 1       Protective Cover Set
- 1       Body Shop Tool Board (A)
- 1       Body Shop Tool Board (B)
- 1       Board, Combination Wrench
- 1       General Mechanics Tool Set
- Paint Spray Booth/Fresh Air Supply system
- Frame alignment Facility/Measuring System, Conventional,  
Unibody
- Inside, Overhead Ventilated Welding AREAS
- Plastic Welder
- Buffers
- Grinders, d. a. Sanders, Straight Line Sanders
- Air Transformers/Regulators
- Panel Spotter
- Unic-Electric Lift, Portable
- Porto-Power 10 Ton
- MIG/TIG Welders
- Oxy-Acetylene Welding Equipment
- Paint Mixing Machine

Arbor Press  
 Vacuum Cleaner  
 Headlight Aiming Kit  
 Paint Spray Guns  
 Drill, Air  
 Body Hammers, Dollies  
 Body Picks  
 Front End Rack/Aligner  
 Plasma cutter  
 Storage Cabinets (fireproof)  
 Storage Cabinets (non-fireproof)  
 Air Hoses  
 Solvent Reclaiming System  
 Exhaust Fans For Rooms  
 Metal Break  
 Metal Shear  
 Bumper Jack  
 Compressors with DRIERS  
 Smokeeater Air Filtration System  
 Classroom Outfits - Bookcases, Desks, Cabinets, Etc.  
 VCR - Television - Video Camera  
 Projectors  
 Hydraulic Car Lifts  
 Extinguishers  
 Eye Wash Basin  
 Safety Shower

Paint Shaker

Individual Study Areas W/AV Capability



SUGGESTED EQUIPMENT LIST  
 AUTO BODY REPAIR AND REFINISHING  
 MAJOR EQUIPMENT LIST

| QUANTITY | ITEM DESCRIPTION                                                              |
|----------|-------------------------------------------------------------------------------|
| 1        | Foreman's Bench                                                               |
| 12       | Work Benches with Vices                                                       |
| 1        | Welding Bench (brick top)                                                     |
| 1        | Spray Booth                                                                   |
| 6        | Steel Shelves                                                                 |
| 4        | Welding Service Carts (4 sets gauge & cutting tip)                            |
| 1        | Air Compressor (air lines & an adequate number of extractors<br>& regulators) |
| 6        | Extension cords                                                               |
| 12       | Air Hose 8' Sections with quick release couples                               |
| 4        | Seat Creepers                                                                 |
| 4        | Flat Creepers                                                                 |
| 1        | 1/2 Ton Crane                                                                 |
| 3        | 3/8" Drill Electric                                                           |
| 6        | 1/8" Drill Electric                                                           |
|          | Frame Straightening Equipment                                                 |
| 1        | 6" Pedestal Grinder                                                           |
| 2        | 2 Ton Flow Jacks                                                              |
| 1        | Twin Saddle Jack                                                              |
| 1        | Twin Post Hoist                                                               |
| 4        | Air Files                                                                     |

|    |                                                       |
|----|-------------------------------------------------------|
| 10 | D.A. 4" Air Sander                                    |
| 6  | Hand Grinder, H.D. Electric                           |
| 1  | Storage Rack Tool Kits (lock type) for fifty students |
| 4  | Electric Polishers                                    |
|    | Air Regulator at every Air Tip                        |
| 1  | Air Transformer & Regulator In Paint Booth            |
| 4  | Dusting Guns                                          |
| 6  | Spray Guns                                            |
| 12 | Pair Safety Stands                                    |
| 1  | Auto Body Air Hammer Kit                              |
| 1  | Set Drying Lamps                                      |
| 1  | Ten Ton Porta-Power Kit (complete)                    |
| 1  | Paint Can Shaker                                      |
| 1  | Undercoating Unit                                     |
| 1  | 1/2" Drive Air Hammer Kit                             |
| 24 | Air Hose (12' section) Quick Release                  |
| 1  | Fire Blanket & Case                                   |
| 4  | First Aid Cabinet                                     |
| 4  | Safety Can                                            |
| 4  | Water Hose (25' section)                              |
| 1  | Tool Box Storage Rack (50)                            |
|    | Midget Wrench Set - Snap On                           |
|    | Phillips Screwdriver Set                              |
|    | Standard Screwdriver Set                              |
|    | Hex Head Wrench Set                                   |
|    | Combination Wrench Set                                |

End Cutter Plier - 7-1/4"  
 Gripping Plier - 7-1/2"  
 Diagonal Plier - 7-1/4"  
 Door Handle Tool  
 Hammer  
 Long Taper Punch - 14"  
 Long Flat Chisel - 12"  
 Phillips Offset Screwdriver - 1 & 2  
 Phillips Offset Screwdriver - 3 & 4  
 Heel Dolly  
 Wedge Dolly  
 General Purpose Dolly  
 Picking & Digging Hammer  
 Wide Nost Cross Peen Hammer  
 Straight Wood File Holder  
 File For Above File Holder  
 Tool Box  
 Drive Socket Set - 3/8" (deep sockets & short)

#### SUPPLIES

Masking Paper - 12"  
 Masking Paper - 3"  
 Masking Paper - 3/4"  
 Sanding Paper - wet/dry - (grits - 320, 400, 500)  
 Polish  
 Sanding Paper - 3" x 8"  
 Primer

Glazing Putty  
 Tak Rags  
 Enamel - reducer  
 Enamel - reducer, acry.  
 Wax Remover  
 Coated Brazing Rod - 3/32"  
 Acetylene Rod (assorted sizes)  
 Rail Drip sealer  
 Sam & Joint Sealer  
 Acid Core Solder  
 Rosin Core Solder  
 Sponges  
 Caulking Strip  
 Sanding Belts  
 Buffing Pads  
 Disc. Cemet  
 Strip Leadher Cement  
 Remover Cement  
 Trim Cement  
 Rubbing Compound  
 Grinding Disc (16, 24, 36, 50, 80, 150, 220 Grit)  
 Metal Conditioner  
 Plastic Body Filler  
 Kerosene  
 Body Lead  
 Assorted Nuts, Bolts

Acry. Lacquer Thinner

Under Coat

Reducer

Steel Wool

## SAFETY

The Florida State Board of Education establishes rules for the operation of public schools. Part III, Section B, Chapter 6A-2 of the State Board of Education Rules contains the standards for existing educational facilities. Subsections deal with the entire school facility in regard to such topics as electrical equipment, flammable materials, ventilation, fire safety, storage, and illumination.

Specifically, subsection 6A-2.97, which follows, contains regulations unique to Vocational classes.

S.B.E. Rule 6A-2.97: Safety devices in shops, laboratories, and other process areas

- (1) Use of personal protection devices and other protective equipment is required when students and staff are exposed to the following:
  - (a) Arc welding, heavy gas cutting, scarfing
  - (b) Spot welding, brazing, or cutting
  - (c) Machining of any materials causing flying chips
  - (d) Injurious radiations, dusts, fumes, gases, vapor mists
  - (e) Sledging, hammering, chipping, scaling, drilling, grinding, chiseling, wire brushing, and caulking operations where flying objects or particles may strike the body
  - (f) Chemicals, acids, caustics, and molten metals



- (2) Personal protection devices which come in contact with the skin shall be sanitized after each use.
- (3) Clothing, jewelry, and personal grooming of personnel in shops and labs shall not constitute a hazard.
- (4) Individual equipment power shut-off, within reach of the operator, shall be provided for all working machinery. Each individual machine shall be equipped with an approved electromagnetic starter switch.
- (5) No safeguard, safety appliance, or safety device guarding a machine or machine part shall be removed or made ineffective except when the machine is stopped and for the purpose of immediate cleaning, repairing, or adjusting. Upon completion of repairing, cleaning, or adjusting, such guard, appliance, or device shall immediately be replaced. Any shop or laboratory tool or equipment found to be unsafe shall be red-tagged and removed from service until the condition is corrected.
- (6) The floors in areas where machines are used shall be kept free from waste, grease, and obstructions.
- (7) Welding operations shall be located in a shielded area, and

the area shall be free of combustible material and persons not wearing protective devices.

- (8) Areas where toxic fumes are produced shall be properly vented to the outside.
- (9) Flammable fumes or dust produced in a student-occupied facility shall be mechanically exhausted to the outside with approved explosion-proof motor-driven equipment with filters in place.
- (10) Each space equipped with unprotected gas valves accessible to students shall have an approved master cut-off readily accessible to the instructor.
- (11) Each shop or lab equipped with electrically powered machinery accessible to students shall have one or more conspicuously color-coded disconnect switches at convenient locations throughout the space.
- (12) Kilns shall be properly shielded from combustibles, combustible surfaces, and personnel, and shall not be located in the path of or adjacent to any means of egress, or exposed to unauthorized persons.
- (13) Automotive, body, and frame repair areas requiring welding and cutting shall be separated from engine overhaul and

related fuel handling activities.

- (14) A tire cage shall be provided when pressurizing tires on split rims.
- (15) Vehicle lifts shall be provided with a mechanical safety lock.
- (16) Piping and working machinery with component parts shall be safety color-coded in accordance with ANSI Z53.1-1971.
- (17) The safety color-coded chart shall be posted in a conspicuous place available to employees and students.
- (18) Hazardous work and storage areas shall be identified by appropriate caution signs.
- (19) All equipment designed to be permanently mounted shall be securely fastened to its supporting surface.
- (20) Safety zone lines shall be used on the floor area surrounding working machinery.
- (21) Fume hoods shall be provided and kept in proper operating condition. Operations where flammable gas, toxic vapors, or noxious odors are given off shall be performed in the

fume hoods.

- (22) Safety equipment such as showers and floor drains, eye wash, fire blankets, and proper extinguishing equipment shall be provided, properly installed, and maintained correctly.

## INSTRUCTOR RESOURCES

## LEARNING RESOURCES

Support material consistent with both program goals and performance objectives should be available to staff and students.

1. Service Manuals

Manuals with current manufacturer's service procedures and specifications. These manuals must be located where students can use them while working in the shop area.

2. Multi-Media

Appropriate up-to-date multi-media materials such as flip charts, tape slides, motion pictures, overhead transparencies and video projection media should be decentralized, readily available wherever possible, and utilized in the training process.

3. Instructional Development Services

The services of professional instructional development personnel should be used when available. At a minimum, equipment and supplies should be available for duplication of

printed material and overhead projector transparency development. Instructional development personnel should conduct in-service workshops and/or other training in curriculum and media development on a structured basis.

#### 4. Periodicals

Current general and technical magazines and newspapers should be available for student and instructor use.

#### 5. Student Materials

Necessary instructional texts or pertinent material should be available for each student to satisfy the objectives of the mode of instruction used. Where textbooks are used, specialized texts should carry a copyright date no older than 3 years, basic texts no older than 6 years.

### PRINTED AND AUDIOVISUAL MATERIALS

This list contains an extensive number of organizations providing training materials. Some materials are free; for others, there is a charge. Details should be requested in writing prior to ordering.



## PUBLICATIONS

1. Auto Body Repair. Lester Duenk, Bennett Publishing Company, 1984.
2. Auto Body Repairing and Repainting. Bill Tobolt, Goodheart-Willcox Co. Inc.
3. Florida State Department of Education, Vocational Division. Teaching Academically Disadvantaged Students in Vocational Education Courses, #DD012 BK-82.
4. Florida State Department of Education, Vocational Division. Keys to Managing Competency-Based Instruction, #TE036 BK-77.
5. Florida State Department of Education, Vocational Division. Guidelines For The Review and Selection of Instructional Materials for Competency-Based Education, #TE034 BK-80.
6. Florida State Department of Education, Vocational Division. Employability Skills Series, #CE001 SS-81.  
(CE003, CE004, CE009, CE010, CE017, CE018, CE024, CE025, CE029, CE030, CE037, CE038)

## AUDIO-VISUALS

## 1. Basic Hand and Power Tools and Fasteners. (filmstrip/slide)

Prentice-Hall Media.

CV1501-22A Basic Hand Tools.

CV1501-22B Basic Power Tools.

CV1501-22C Fasteners.

## 2. Filing Sanding. (filmstrip/slide) Prentice-Hall Media.

CV1502-23A Files and Filing.

CV1502-23B Abrasives.

CV1502-23C Power Sanders.

CV1502-23D Disc Sander Application.

CV1502-23E Orbital/Straight Line Sander Application.

## 3. Welding, Cutting and Metal Shrinking. (filmstrip/slide)

Prentice-Hall Media.

CV1503-24A Oxy-Acetylene Welding Set Up.

CV1503-24B O-A Welding Procedure.

CV1503-24C O-A Cutting.

CV1503-25A Metal Shrinking By Heat.

## 4. Body Fillers. (filmstrip/slide)

Prentice-Hall Media.

CV1504-26A Plastic Body Filler.

CV1504-26B Body Solder.

CV1504-26C Fiberglass Repair of Rusted Area.

5. Automotive Glass and Trim. (filmstrip/slide)

Prentice-Hall Media.

CV1505-29A Hardware & Trim.

CV1505-29B Stationary Glass Replacement: Rubber Channel.

CV1505-29C Stationary Glass Replacement: Adhesive Glass.

CV1505-29D Moveable Glass Replacement.

CV1505-29F Tailgate Glass Replacement.

6. Auto Metal Correction and Repair. (filmstrip/slide)

Prentice-Hall Media.

CV1506-31A Frame Construction.

CV1506-32A Frame Damage.

CV1506-32B Damage Estimation.

CV1506-33A Removal, Replacement and Alignment: Fender.

CV1506-33B Door Panel.

CV1506-33C Removal, Replacement and Alignment: Hood.

CV1506-33D Removal, Replacement and Alignment: Trunk.

CV1506-33E Quarter Panel Removal and Replacement.

CV1506-34D Seat Removal and Replacement.

7. Fundamentals: Safety and Equipment. (filmstrip/slide)

Prentice-Hall Media.

CV1301-15A Automotive Painting Safety.

CV1301-33A Basic Shop Equipment.

CV1301-33B The Suction Feed Spray Gun.

CV1301-33C The Pressure Feed Spray Gun.

- CV1301-33E Spray Equipment: Air Compressors.
- CV1301-33F Spray Equipment: Air Transformers.
- CV1301-33G Spray Equipment: Air Line Size and Selection.
- CV1301-33H Spray Equipment: Booths.
- CV1301-33I Spray Equipment: Baking and Drying.

8. Preparation for Painting. (filmstrip/slide)

Prentice-Hall Media.

- CV1302-41A Surface Preparation.
- CV1302-42A Masking Procedures.
- CV1302-45A Sanding Abrasives.
- CV1302-45B Hand Sanding Techniques.
- CV1302-45C Power Sand Techniques.
- CV1302-45D Complete Finish Removal and Metal Conditioning.

9. Selection and Application of Materials. (filmstrip/slide)

Prentice-Hall Media.

- CV1303-35A Refinishing Materials.
- CV1303-35B Undercoat Application: Primer-Surfaces.
- CV1303-35C Undercoat Application: Sealers.
- CV1303-46A Acrylic Enamel and Enamel Application.
- CV1303-46B Acrylic Lacquer Application.
- CV1303-46C Interior Repainting.

10. Paint Mixing and Matching. (filmstrip/slide)

Prentice-Hall Media.

- CV1304-36A Topcoats: Selection.

- CV1304-36B Topcoats: Color Determination and Preparation.
- CV1304-36C Topcoats: Initial Color Matching and Correction.
- CV1304-36D Topcoats: Color Tinting Techniques.

11. Spray Gun Operation and Cleaning. (filmstrip/slide)

Prentice-Hall Media.

- CV1305-33D Spray Gun Adjustment and Spray Patterns.
- CV1305-34A Spray Equipment: Setups.
- CV1305-34B Cleaning the Suction Feed Spray Gun.
- CV1305-34C Cleaning the Pressure Feed Spray Gun.
- CV1305-43A Basic Spraying Techniques.
- CV1305-43B Defective Spray Patterns.

12. Paint Problems. (filmstrip/slide)

Prentice-Hall Media.

- CV1306-43C Paint Problems: Bubbles, Blisters and Pop-Ups.
- CV1306-43D Paint Problems: Chipping.
- CV1306-43E Paint Problems: Color Mismatch.
- CV1306-43F Paint Problems: Cracked/Checked Finish.
- CV1306-43G Paint Problems: Craters and Fisheyes.
- CV1306-43H Paint Problems: Foreign Material Contamination.
- CV1306-43I Paint Problems: Lifting.
- CV1306-43J Paint Problems: Metal Finishing Marks.
- CV1306-43K Paint Problems: Orange Peel.
- CV1306-43L Paint Problems: Overspray.
- CV1306-43M Paint Problems: Peeling.
- CV1306-43N Paint Problems: Sags and Runs.

CV1306-43O Paint Problems: Slow Drying.

CV1306-43P Paint Problems: Water Spotting.

CV1306-43Q Paint Problems: Wrinkling.

CV1306-43R Paint Problems: Mottle.

13. Special Effects. (filmstrip/slide)

Prentice-Hall Media.

CV1307-46D Pressure Sensitive Wood Grain Transfer Film Repair  
and Removal.

CV1307-46E Pressure Sensitive Wood Grain Transfer Film Application.

CV1307-46F Painted Accent Stripes.

CV1307-46G Vinyl Tape Accent Stripes.

CV1307-46H Spray-on Vinyl Roof Preparation.

CV1307-46I Spray-on Vinyl Roof Application.

14. Polishing, Detailing and Minor Repairs. (filmstrip/slide)

Prentice-Hall Media.

CV1308-35D Rubbing Compounds and Polishes.

CV1308-41B Minor Repair Procedures: Polishing and Buffing.

CV1308-41C Minor Repair Procedures: Brush and Compound Touch-up.

CV1308-47A Polishing and Detailing.

15. Automobile Custom Finishing. (3 filmstrips) Career Aids Inc.

16. Autobody Repair: Refinishing. (6 filmstrips) Career Aids Inc.

17. Autobody Repair: Metal Work. (6 filmstrips) Career Aids Inc.



18. Autobody Repair: Refinishing Methods. (4 filmstrips) Career Aids Inc.
19. Basic Autobody Repair Skills. (12 filmstrips) DCA Educational Products.

## PROFESSIONAL ORGANIZATIONS AND SUPPORT SERVICES

### PROFESSIONAL ORGANIZATIONS

Membership in professional associations offers vocational educators an enormous range of opportunities for working together to strengthen the field and to develop personal competence and satisfaction in work. The associations have similar goals and activities. They seek excellence in program content by means of joint efforts among members, communications that keep members current, forums for the discussion of issues in the field, useful and stimulating publications and sound professional growth experiences at local, state, regional, and national meetings and annual conventions. They are concerned with increasing public understanding and support of the field.

VOCATIONAL INDUSTRIAL CLUBS OF AMERICA (VICA)

AUTOMOTIVE SERVICE COUNCILS (ASC)

FLORIDA AUTOMOBILE DEALERS ASSOCIATION (FADA)

FORD SERVICE MANAGER COUNCIL

INTER-INDUSTRY COUNCIL ON AUTOMOTIVE CRASH REPAIR (I-CAR)

TECH-COR

FLORIDA VOCATIONAL ASSOCIATION

GM TRAINING CENTER - Jacksonville

R-M/DITZLER/3M/DUPONT SCHOOLS

UPDATE TRAINING SEMINAR - Kansas Jack/State Department of Education

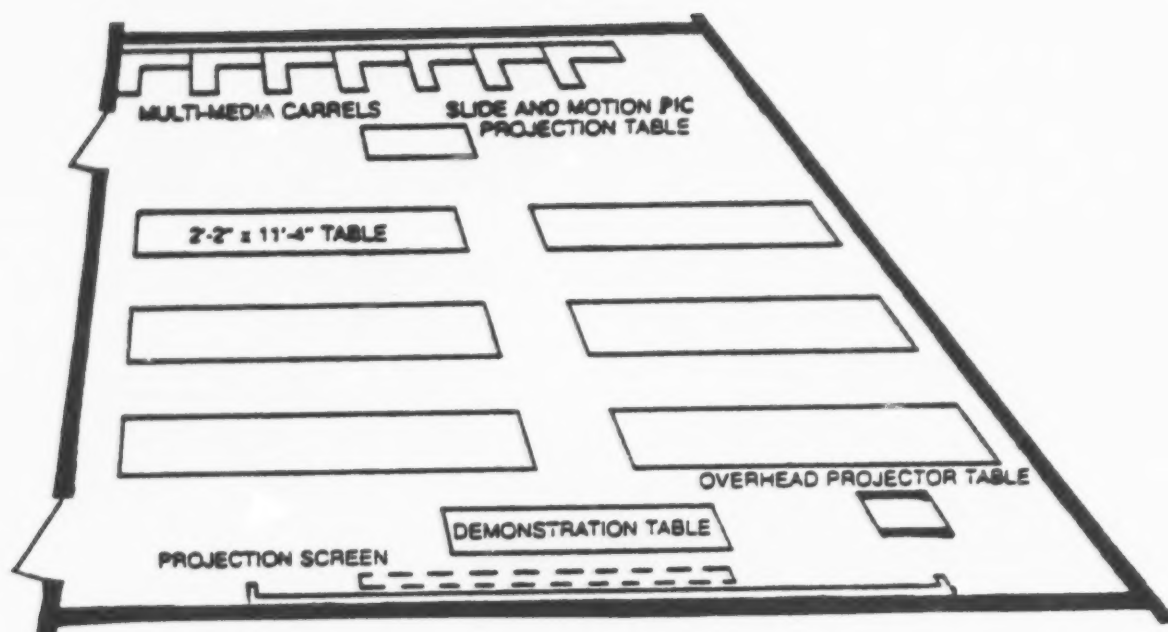
BLACKHAWK CENTER - Norcross, Georgia

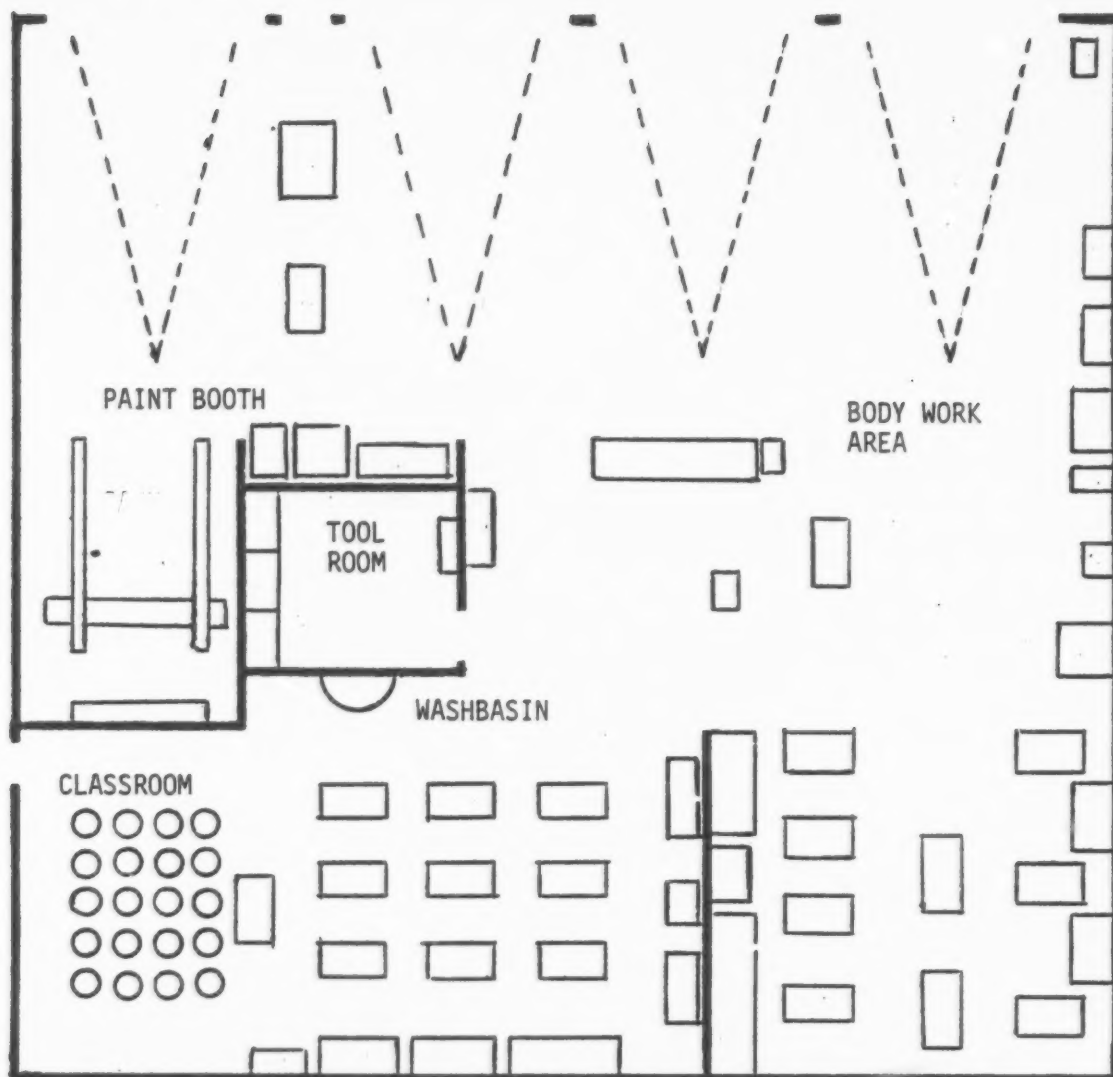
NATIONAL AUTOBODY CONGRESS EXPOSITION

AUTOMOTIVE SERVICE EXCELLENCE (ASE)

FLORIDA ASSOCIATION OF TRADE AND INDUSTRIAL EDUCATORS

APPENDIX A  
FACILITIES DIAGRAMS

SUGGESTED LAYOUT FOR A CLASSROOM



AUTOMOTIVE BODY REPAIR AND REFINISHING SHOP LAYOUT  
APPROXIMATE SIZE 80' x 80'



APPENDIX B  
VICA ORGANIZATION CHART

